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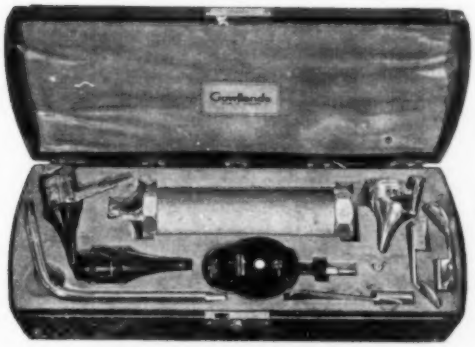

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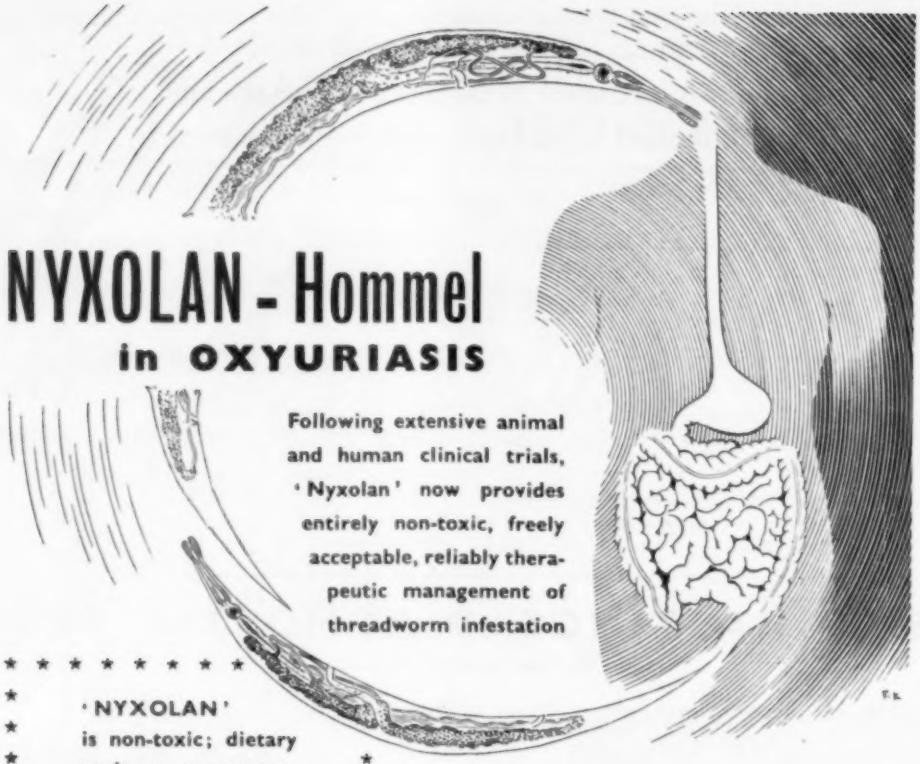

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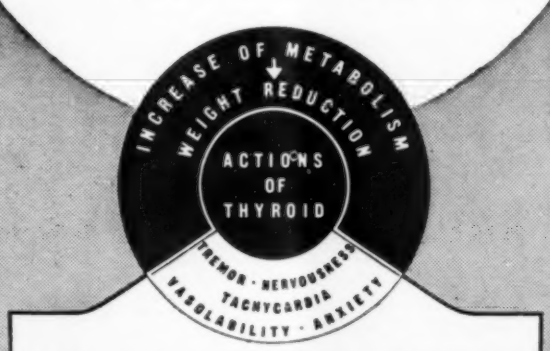

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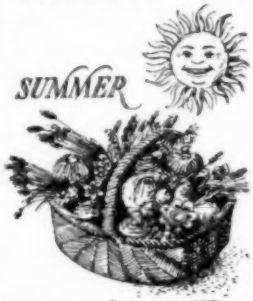

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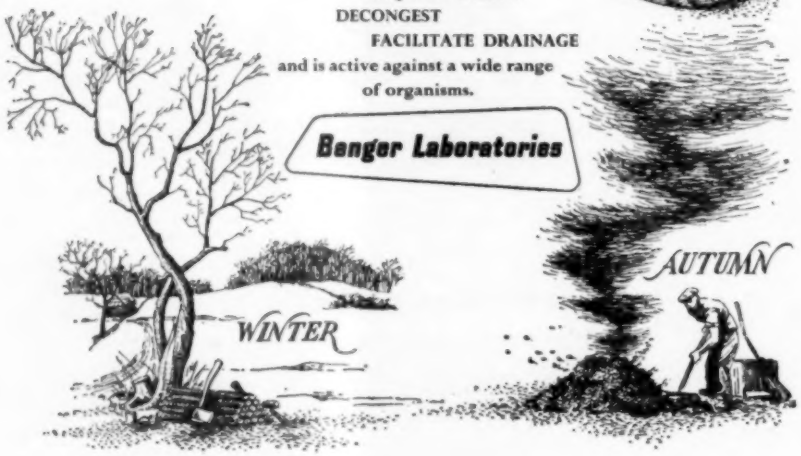

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DYSPHAGIA DUE TO DISC DEGENERATION

J. N. JACOBSON, D.M.R.E.(CAMB.), D.P.M.(UNIV. LOND.)
and
J. D. WICHT, D.L.O., R.C.P. AND S.(ENG.)
Cape Town

Of the many lesions which are known to cause dysphagia, little mention has been made of that resulting from pressure upon the hypopharynx and the oesophagus by vertebral hypertrophic spurs.

Hypertrophic spurs, amongst other changes, are an expression of spondylitis osteo-arthritica and are a constant development in degeneration of an intervertebral disc.

Disc degeneration occurs most commonly in those sites in the vertebral column which are subject to the greatest extent of movement. These sites are those in the lowest 4 cervical interspaces, the lowest 3 lumbar interspaces and the lumbo-sacral interspace.

All physiques are subject to disc degeneration to about the same degree. In the cervical spine, in our experience, the incidence is about equal in the two sexes.

Disc degeneration, as well as narrowing the interspace, results in sclerosis of the opposing articular surfaces of the contiguous vertebral bodies, and hypertrophic spur formation on the anterior, antero-lateral and postero-lateral aspects of the margins of these surfaces.

It is a lesion of the latter years of life, usually occurring after the age of 40 years.

The interest, as far as this discussion is concerned, is in the development of hypertrophic spurs on the anterior aspect of the bodies in the cervical spine, at the level of the hypopharynx and the cervical oesophagus. It is quite apparent that any space-occupying lesion behind the hypopharynx and the oesophagus must, by pressure, reduce the lumen of these passages. Osteophytes on the anterior aspect of the vertebral bodies, if large enough, can therefore indent the posterior surfaces of the hypopharynx and oesophagus.

Iglauer,[1] discussing a case of dysphagia due to pressure

on the hypopharynx by hypertrophic spurs of the cervical vertebrae, was only able to find 6 similar cases described in the literature. Since his publication, we have found one additional published case, quoted by Templeman.[2] It would appear either that such dysphagia is of great rarity, or that it is not often recognized as an entity.

The impairment in swallowing is likely to be where vertebral pressure is exerted on the fixed points of the attachment of the hypopharynx and the upper oesophagus, namely in the region of the cricoid cartilage.

CASE RECORD

In the case presented here, the patient, a European female 70 years old, had suffered from gradually increasing difficulty in swallowing solids and dry foods for some years. At times there was a gurgling sound with deglutition and a tendency to regurgitate. She also complained of intermittent hoarseness over the same period.

On indirect examination of the hypopharynx there was seen to be frothy mucus in the left pyriform sinus, and slight oedema of the left arytenoid eminence. The left vocal cord and arytenoid were partly fixed, producing asymmetry of the glottis on phonation.

The lateral radiograph of the neck (Fig. 1) demonstrates advanced disc degeneration in the 2nd, 3rd, 4th, 5th and 6th cervical interspaces. There is heavy osteophyte formation at each of these disc spaces, most marked at the 4th and 5th. The osteophytes encroach upon the adjacent hypopharynx and oesophagus. The thyroid cartilage is displaced forwards. The anterior buckling of the air passage is a striking feature in the radiograph.

On fluoroscopy the barium bolus was seen to be delayed at the level of the 3rd interspace, and passed slowly down the pharynx until the 6th interspace was reached. In the normal person the passage of the bolus through these levels is so rapid that visualization of it is only fleeting.

The serial radiographs (Fig. 2) show the indentation of the posterior wall of the hypopharynx and the adjacent oesophagus by the vertebral spurs, with irregular narrowing of the lumen. The 3 exposures of the act of deglutition were taken at intervals of approximately 3 seconds. It is clearly demonstrated that the barium column was unduly slow in passing beyond the spurs projecting from the anterior aspect of the affected cervical vertebral bodies.

In our opinion, the possibility that disc degeneration may be the cause of slowly progressive dysphagia in persons of advancing age must always receive due consideration. Particularly is this so if oesophagoscopy is contemplated, for Pincsohn [3] actually describes the death of a patient shortly after oesophagoscopy. At necropsy the oesophagus was found to be perforated at the site of large exostoses on the 9th, 10th and 11th dorsal vertebrae, which had indented the oesophageal wall.

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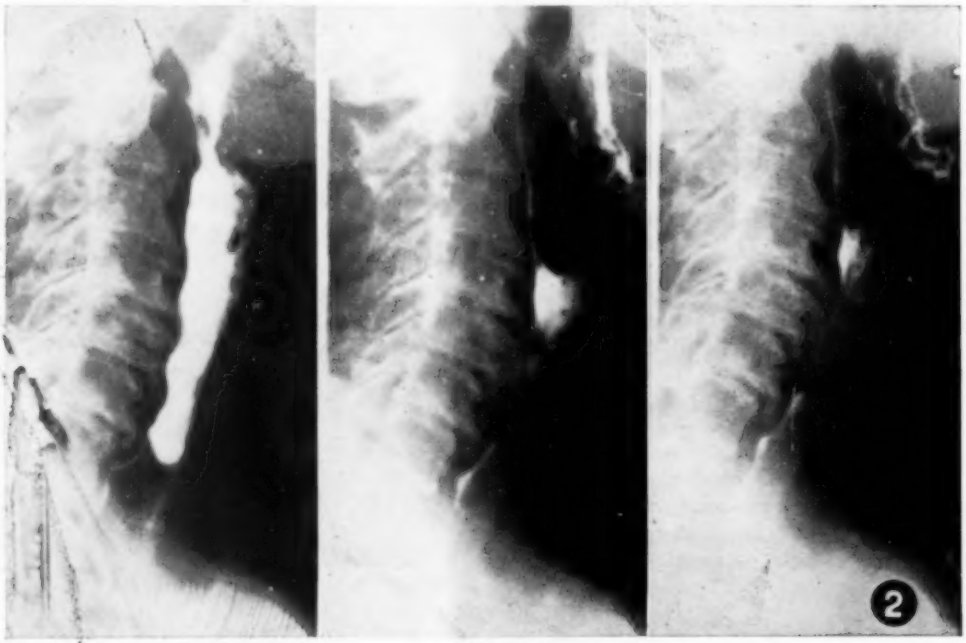

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South African Medical Journal

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EDITORIAL

THE PREVENTION OF DIPHTHERIA IN SOUTH AFRICA

Since preventive inoculation against diphtheria has come to be recognized as a normal event in the life of every child, in many places in the world a case of diphtheria, and still more a fatal case, has become a rarity. In England and Wales for instance, in a recent period of 10 years (1941-51) both the notification rate and the death rate from this disease fell by 98.8%. In the City of Copenhagen in Denmark, after 1952 it could be recorded that no deaths from diphtheria had occurred for 4 years and that there had been no cases of the disease for 2 years. These are only examples which could be repeated for other countries and other towns.

In the last century, and in former times, diphtheria was a name of terror for parents. In the field of treatment the victory over diphtheria was one of the early successes of bacteriology, gained while it was still a young science. With the use of antitoxic serum the case mortality of the disease was greatly reduced. But it was never brought down to zero, nor was there any great reduction in the incidence of the disease, which remained endemic throughout the western world and became epidemic at times and places. Only a few years ago diphtheria was the greatest cause of death in school children.

With the advent of the prophylactic preparations made from diphtheria toxin, a preventive weapon against diphtheria became available, and, duly exploited by the health authorities by means of administrative measures and propaganda, it has resulted in the extirpation (or the near extirpation) of the disease in certain parts of the world. To achieve this result it appears to be necessary to secure the protective immunization of a large majority of the infant population and of almost the whole of the school-child population. There is a specially virulent form (*gravis*) of the diphtheria infection, hitherto fortunately far less common than the *mitis* form, against which a lower immunization rate is less effective; and only experience can show whether the community can be made secure against *gravis* infection with the antigens now in use. Certainly some lower immunization rates that are effective against the ordinary diphtheria infection are not effective in the presence of infection of higher virulence.

VAN DIE REDAKSIE

DIE VOORKOMING VAN WITSEERKEEL IN SUID-AFRIKA

Vandat voorbehoedende inenting teen witseerkeel 'n alledaagse gebeurtenis in elke kind se lewe geword het, is daar baie plekke in die wêreld waar witseerkeel baie selde voorkom en witseerkeelsterfgevalle uiters seldsaam is. En Engeland en Wallis byvoorbeeld het beide die aanmeldingsyfer en die sterftesyfer vir witseerkeel gedurende 'n tydperk van 10 jaar (1941-51), met 98.8% gedaal. In Kopenhagen, hoofstad van Denemarke, kon na 1952 aangeteken word, dat geen witseerkeelsterfgevalle vir 4 jaar voorgekom het nie en dat geen witseerkeelgevalle vir 'n tydperk van 2 jaar aangemeld is nie. Hierdie gegewens dien slegs as voorbeelde wat ook in ander lande en stede geldig is.

Gedurende die vorige eeu en vroeër was witseerkeel 'n onheilspellende woord vir die ouer. Die welslae waarmee bakteriologie die stryd teen witseerkeel gevoer het, is een van die vroegste oorwinnings wat dié wetenskap, nog in sy jong jare, in die veldtog teen siekte behaal het. Met gebruik van antitoksiese serum het die witseerkeelsterftesyfer vinnig gedaal. Dit het egter nooit nulpunt bereik nie en daar was geen wesenlike afname in die getal witseerkeelgevalle wat voorgekom het nie. In westerse lande het dit 'n endemiese siekte gebly en met tye en op plekke het epidemies uitgebreek. Net 'n paar jaar gelede het witseerkeel nog bo aan die sterftesyferlys vir skoolgaande kinders gestaan.

Met die vrystelling van voorbehoedmiddels wat van witseerkeeltoksien vervaardig is, het 'n magtige wapen vir die veldtog teen witseerkeel beskikbaar geword. Gesondheidsowerhede het goeie gebruik daarvan gemaak en as gevolg van administratiewe maatreëls en propaganda is die siekte in sekere wêrelddele bykans uitgewis. Om hierdie resultaat te behaal is dit blykbaar nodig om beskermende immunisasie vir 'n groot meerderheid babetjies en feitlik alle skoolgaande kinders te verseker. Daar is 'n besonder soort boosaardige (*gravis*) witseerkeelinfeksie, (wat tot dusver gelukkig baie meer seldsaam as die *mitis*-soort is) waarteen 'n laer immunisasiestandaard minder effektief is; ondervinding alleen sal ons leer of die gemeenskap teen 'n *gravis*-infeksie deur middel van die antigene wat nou in gebruik is), beskerm kan word. Dit staan vas dat sekere van die laer immunisasie-standaarde wat i.v.m. gewone witseerkeelinfeksie doeltreffend is nie teen die meer virulente infeksies doeltreffend sal wees nie.

'n Artikel oor hierdie vraagstuk deur drs. Bokkenheuser en Heymann verskyn in die *Tydskrif* hierdie

These questions are dealt with in an article by Drs. Bokkenheuser and Heymann, which we publish this week (page 685). These authors draw attention to the fact that in the Union of South Africa as a whole, during the 10 years 1943-52, there has been no significant decline either in notified cases of diphtheria or in deaths from the disease, and that this applies both to Europeans and non-Europeans. That is to say, the course of the disease in South Africa has been in unfavourable contrast with events in Europe. They also analyse the figures for Johannesburg and show that in that city since 1945 (until 1952) there has been no decline in the diphtheria incidence or mortality. Their conclusion is that the reaction to diphtheria in the Union is that of a non-immunized community, and they support this view also by the results of their study of the age-distribution of the disease, which in South Africa is greatest in the younger age-groups and does not show that shift to older age-groups that is found in well-immunized communities.

The moral to be drawn is that in South Africa we are failing to prevent an eminently preventible disease and that more urgent measures are called for in order to get a greater proportion of the community immunized—particularly infants and children.

It is not, however, to be supposed that South Africa has been entirely supine in this matter. In certain classes it is the custom to get all the babies immunized. In Cape Town over 14,000 non-Europeans (nearly all children) are being immunized in a year by the City Health Department, and also 3,500 Europeans (the annual number of births is about 10,000 non-Europeans and 3,500 Europeans). There are also large numbers of babies, specially Europeans, immunized by private practitioners. The Cape Town statistics show a heavy fall in diphtheria incidence and mortality both in Europeans and non-Europeans in the last 20 years, during which time immunization has been actively practised. In the Johannesburg figures (European) cited by our authors there is evidence of a decline in the early 1940's, though the curve has since flattened out.

The position is not discouraging. The degree of success that has been achieved in certain places in South Africa should spur the country to greater efforts, in the sanguine expectation that if the children are adequately immunized the disease will vanish from amongst them.

week op bladsy 685. Die skrywers beklemtoon die feit dat daar in die Unie van Suid-Afrika as geheel, gedurende 'n tydperk van 10 jaar (1943-52), geen noemenswaardige afname in die getal witseerkeelgevalle wat aangemeld is of in die witseerkeelsterftesyfers (vir beide blankes en nie-blankes) te bespeur is nie. Dit wil sê dat die verloop van die siekte in Suid-Afrika ongunstig vergelyk met dié in Europa. Hul ontleed ook die syfers vir Johannesburg en toon aan dat gedurende 1945 tot 1952 geen daling in dié stad se witseerkeelgevalle of -sterftesyfer plaasgevind het nie. Hul het tot die gevolgtrekking gekom dat die reaksie tot witseerkeel in die Unie dié is van 'n nie-geïmmuniseerde gemeenskap. Hul staaf ook hul bewering met resultate wat hul verkry het deur 'n studie oor die ouderdomsindeling van die siekte te maak. In Suid-Afrika kom die siekte die meeste onder die laer ouderdomsgroepe voor en toon dit nie die verskuiwing na 'n hoër ouderdomsgroep nie wat van behoorlik geïmmuniseerde gemeenskappe kenmerkend is.

Die les wat Suid-Afrika hieruit kan put is dat ons in gebreke gebly het om 'n siekte te voorkom wat by uitstek voorkombaar is, en dat daar 'n dringende behoefte bestaan vir doeltreffende maatreëls om te verseker dat 'n groter proporsie van die bevolking—vernaamlik babetjies en kinders—geïmmuniseer word.

Dit moet egter nie aanvaar word nie dat Suid-Afrika hierdie saak met algehele traagheid aangepak het nie. Daar word jaarliks in Kaapstad meer as 14,000 nie-blankes (meesal kinders) en ook 3,500 blankes deur die Stad se Gesondheidsdepartement geïmmuniseer (die jaarlikse geboortesyfer is ongeveer 10,000 nie-blankes en 3,500 blankes). 'n Groot aantal babetjies, vernaamlik blankes, word deur private geneeshere geïmmuniseer. Statistiek vir Kaapstad toon 'n skerp afname in witseerkeelgevalle en -sterftesyfers in die afgelope 20 jaar. Gedurende hierdie tydperk is immunisasie aktief uitgevoer. Die syfers (blankes) vir Johannesburg wat deur die skrywers aangehaal is, het 'n daling vir die eerste paar jaar van die 1940's geopenbaar maar sedertdien loop die kurwe reguit.

Die toestand is nie ontmoedigend nie. Die mate van sukses wat in sekere dele van ons land behaal is behoort ons tot groter pogings aan te spoor met die hoopvolle vooruitsig dat as die kinders doeltreffend geïmmuniseer is hierdie siekte uit hul midde sal verdwyn.

NEWS IN THE JOURNAL

This *Journal* as the chief organ for the publication of South African medical writings seeks primarily to interest members of the medical profession in the advance of medical knowledge in this country and the world generally. In that capacity its columns are open for the scientific articles which constitute the body of the *Journal*. In the next place, as the organ of the Medical Association of South Africa the *Journal* desires to keep members informed of what is going on within the Association.

There are in the Association 13 Branches and 24 Divisions as well as numerous Groups and Sub-Groups. Many of them hold meetings every month, at which matters of wide interest to the Association and profession as a whole are discussed. Too rarely are these proceedings reported in the *Journal*. They can only be published if if they are sent in by the Branch or Division or Group. Secretaries are particularly requested to make a point of promptly sending to the *Journal* reports of any business transacted that is likely to be of general interest. Of particular value are discussions at clinical meetings. The regular reporting of meetings would enhance the value and interest of the *Journal* as the organ of the Association.

Meetings of medical interest are also held by universities, hospitals, and other bodies outside the Association,

who are reminded that reports of these meetings are welcomed by the *Journal*.

Apart from meetings, other local news is lost to the *Journal* because it is not reported. In every town matters of public medical interest arise from time to time, and there are always items of social and personal news concerning individual doctors which would interest their friends in other parts of the country. Even deaths frequently go unnoticed in the *Journal*. The suggestion is made that every Branch or Division should appoint a member as correspondent, who would undertake to keep a look-out for news and report it to the *Journal*. Where there is more than one town in the Branch or Division it would be well to appoint a correspondent in each. News items forwarded by individual members are also welcomed.

Our aim is to increase the news interest of the *Journal*, and the co-operation of all members of the Association is invited.

THE COMING 'REFERENDUM'

At about the same time as they receive this issue of the *Journal*, members of the Association, as well as all other South African medical practitioners, will receive the Voting Paper ('Questionnaire') on the subject of the Registration of Specialists and/or Consultants together with a reprint of the official memorandum on the subject which was published in the *Journal* of 17 July (1954, **28**, 607).

The closing date for the receipt of voting papers is 4 September 1954. The result of the voting will have an important influence on the future of medical practice in this country, and every medical practitioner is urged to give careful consideration to the matter and to record his or her vote.

The papers which will be circulated do not include the 'History of the Subject in South Africa' which was published in the *Journal* of 13 March (1954, **28**, 216), to which practitioners are also referred.

DIPHTHERIA IN SOUTH AFRICA

V. BOKKENHEUSER, CAND. MED. (COPENH.), DIP. BACT. AND SERO. (PARIS)
and
C. S. HEYMANN, M.B., CH.B., D.P.H., D.T.M. AND H.,R.C.P. AND S.
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In 1929 Grasset [1] drew attention to the large number of cases of diphtheria occurring in the Union of South Africa. Approximately 1,200-1,300 cases were notified annually with a case mortality of about 14%, equivalent to about 180 deaths. In describing diphtheria prophylaxis, he stated, 'We have every reason to believe that the methodical use of diphtheria anatoxin will mark an important and decisive step towards prophylaxis against diphtheria in South Africa'.

Fourteen years later Murray [2] observed that the number of notified cases of diphtheria was rising; in 1941 there were 3,317 cases and a case mortality of 3.9%, equal to 130 deaths. The number of deaths did not differ substantially from those of 1929. He urged the use of early and systematical immunization.

After a further period of 11 years the official figure for diphtheria cases in the Union for 1952 was 3,675, with an 11% case mortality, or 401 deaths;[3] both the number of notified cases and the case mortality had risen.

We therefore decided to compare the morbidity and mortality in South Africa with those in other countries and to obtain information about the distribution of diphtheria in different races and age-groups.

Table I is made up from official figures for diphtheria morbidity and mortality from England and Wales,[4] France,[5] Copenhagen [6] and New Zealand.[7] It shows the notifications and deaths per 100,000 inhabitants, and the case mortality (deaths as a percentage of notifications).

Not all the data are reliable, particularly the notification figures, which are probably not accurate because a large number of cases with very mild symptoms are not diagnosed. McComb [8] states that it is assumed that only 1 out of 5 cases in the United States is reported. Although diagnosis may not be possible in a small number of cases,[9] this number probably makes up less than 10% of the whole, and for this reason the number of notifications can be reckoned as an understatement. The population figures can be trusted, and the mortality figures are presumably fairly accurate.

If the notification figures are accepted as an expression of clinically-recognized diphtheria, it appears that there has been a remarkable decrease during the past decade in diphtheria morbidity in all 4 areas. In 1941 50,797 cases were notified in England and Wales, as against 664 (1.3%) in 1951. In France and New Zealand the notifications in 1951 were about 6% of the 1946 figures. Copenhagen had a severe epidemic during the 1939-1945 War, but since 1951 the disease has disappeared. This epidemic was caused mainly by the *gravis* type of *C. diphtheriae* [10] which indicates that this type can break down even the immunity of a population with extensive immunization of children. The immunity conferred on the Copenhagen population by immunizing the younger age-group was insufficient to prevent an outbreak in older and less immunized age-groups (70% of the patients were over the age of 15 years).

The number of deaths shows a similar downward trend for England and France. The number of diphtheria deaths in England in 1941 was 2,622, as against 33 in 1951; and in France it was reduced from 3,027 in 1944

TABLE I. DIPHTHERIA MORBIDITY AND MORTALITY IN ENGLAND AND WALES, FRANCE, COPENHAGEN AND NEW ZEALAND

	Notified Cases per 100,000 Population				*Deaths per 100,000 Population*			*Deaths as % of Notification (D/N×100)*		
	E and W	*F*	*C*	*N.Z.*	*E and W*	*F*	*C*	*E and W*	*F*	*C*
1941	128		17·3		6·7		0·57	5·2		3·31
1942	105		6·6		4·8		0·14	4·6		2·13
1943	81·9		30·2	51·5	3·2		2·50	3·9		8·30
1944	54·6	110·4	121	43·5	2·1	8·29	10·57	3·9	7·54	8·67
1945	43·6	119·9	121	63·6	1·6	8·86	10·55	3·7	7·38	8·73
1946	28·6	57·5	34·9	99·6	1·1	4·95	2·40	3·9	8·61	7·11
1947	12·8	29·3	9·0	30·8	0·6	2·16	1·18	4·4	7·37	13·24
1948	8·2	17·6	3·8	9·2	0·4	1·19	0·66	4·6	6·77	17·24
1949	4·3	12·6	2·1	4·9	0·2	0·73	0	4·5	5·79	0
1950	2·2	9·43	0·4	3·0	0·1	0·49	0	5·1	5·20	0
1951	1·5	6·37	0	3·6	0·08	0·32	0	5·0	5·03	0
1952			0	2·7		0·27	0		4·54	0

E and W=England and Wales F=France C=Copenhagen N.Z.=New Zealand

to 114 in 1951. Copenhagen did not follow the same trend because of the *gravis* epidemic, but no death has occurred there from diphtheria since 1949. The case mortality is between 4 and 8% in spite of the advantages of modern therapy. The only exception is Copenhagen 1947 and 1948, when there was apparently a much higher death rate, which may be due to the predominant *gravis* infection or to the error involved in small figures.

In the town of Hamilton, Ontario, Canada (population 220,000) only 2 cases of diphtheria have been reported since 1931 and no deaths.[11]

These examples demonstrate what can be done towards stamping out the disease.

In Table II the data for South Africa are presented; the population figures were obtained from the Department of Census and Statistics, Pretoria, and the number of notified cases and deaths from the Union Health Department.[12]

This table shows that the notified cases are about 30 per 100,000. There are minor annual fluctuations, but no tendency to a decrease. The number of reported deaths is much the same from year to year, with the exception of an increase for 1951 and 1952. This is reflected in the last column, which shows a more serious prognosis in recent years.

Comparison of Table I and II shows South Africa's diphtheria position until 1946-47 as no worse than elsewhere. Since that time, however, it has lagged far behind in epidemiological control of the disease. This is demonstrated in Fig. 1, where the notification rates of several countries have been plotted.

It is apparent that the notification rate has remained fairly constant over a number of years in South Africa, whereas it has dropped dramatically elsewhere. In 1951 there were 5 times as many clinical diphtheria cases notified in South Africa as in France, 10 times as many as in New Zealand, and 20 times as many as in England and Wales. Diphtheria has been eradicated from Copenhagen.

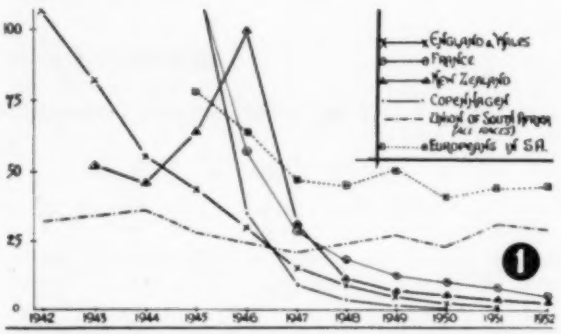

Fig. 1. Notified cases of diphtheria per 100,000 population overseas and in South Africa, 1942-52.

Racial Distribution. The question arises whether the high morbidity is due to a peculiar racial structure of the population. The racial make-up of the Union is approximately 27% Europeans and 73% Non-Europeans (of which about 90% is Bantu). In Table III the data are divided into these two groups.

The following conclusions may be drawn from Table III:

1. The European notification rate is greater than that of non-Europeans, in whom, however, it shows signs of rising (see Fig. 1).

TABLE II. DIPHTHERIA MORBIDITY AND MORTALITY (ALL RACES) IN THE UNION OF SOUTH AFRICA, 1943-52

	Population (million)	*Notified Cases*	*No. of Deaths*	*Notified Cases per 100,000*	*Deaths per 100,000*	D/N × 100
1943	10·90	3,417	205	32·3	1·9	5·9
1944	11·08	3,856	269	34·7	2·5	7·2
1945	11·27	3,046	245	26·9	2·2	8·0
1946	11·45	2,738	184	23·8	1·6	6·8
1947	11·76	2,345	165	19·9	1·4	7·0
1948	11·89	2,733	195	22·9	1·6	7·1
1949	12·11	3,250	320	26·9	2·6	9·8
1950	12·26	2,733	195	22·2	1·6	7·1
1951	12·45	3,844	470	30·8	3·8	12·2
1952	12·92	3,675	401	28·5	3·1	11·0

TABLE III. DIPHTHERIA MORBIDITY AND MORTALITY (BY RACE) IN THE UNION OF SOUTH AFRICA, 1945-52

	Europeans			*Non-Europeans*		
	Notified Cases per 100,000	*Deaths per* 100,000	D/N × 100	*Notified Cases per* 100,000	*Deaths per* 100,000	D/N × 100
1945	76·5	4·6	6·1	14·4	1·6	10·7
1946	62·5	2·5	3·9	13·7	1·4	10·1
1947	45·9	1·8	3·9	13·4	1·3	9·8
1948	43·6	2·1	4·9	17·5	1·5	8·7
1949	50·3	2·8	5·5	20·0	2·6	12·8
1950	41·5	2·0	4·8	17·0	1·5	8·7
1951	43·0	3·0	7·0	27·4	3·9	14·5
1952	44·1	2·6	5·9	24·3	3·3	13·7

2. The European notification rate (1951) is about 30 times as high as that of England and Wales.

3. There is no indication of a fall in the European morbidity.

4. The European mortality rate is similar to that of non-Europeans.

5. The European case mortality rate is of the same order as that prevailing overseas, but the non-European rate is higher.

The apparently higher case mortality rate in non-Europeans may be due to mild cases escaping notification.

In order to obtain a better evaluation, the occurrence of diphtheria in Johannesburg was analysed, because the non-Europeans live in townships, their numbers are better known, notification of disease is organized and medical facilities are freely available. However, as Higginson [13] pointed out, information obtained about a non-European population is seldom accurate.

Table IV shows the racial composition of the population of Johannesburg.

The figures for Europeans in Table V (Johannesburg) are very similar to those in Table III (Union). There is no appreciable difference in the morbidity and mortality of diphtheria between the Europeans living in Johannesburg and those in other parts of South Africa. (Similar morbidity figures were obtained by Woodrow [14] for Cape Town.) There has been no downward trend since 1945.

In the non-Europeans (Johannesburg) the notification rate, fluctuating from one year to the next, shows, if anything, a slight upward tendency. The death rate varied, reaching the alarming figure of 16.49 per 100,000 of the population in 1952, which exceeds the overseas figures for the past decade. In 1952, nearly 1 out of 4 known cases among non-Europeans was fatal.

Urban and Rural. Comparison of Tables V and III suggests that there is a higher notification rate for diphtheria among urban than rural non-Europeans, but that the disease is equally serious.

The mean annual case mortality for the 12 years 1941-52, based on 128 European deaths and 374 non-European deaths, is 4.85% and 14.22% respectively.

TABLE IV. POPULATION OF JOHANNESBURG, 1945-52

	European	*Bantu*	*Coloured*	*Asiatic*	*Total*
1945-46	322,300	268,000	23,700	15,100	629,100
1948-49	343,000	407,000	26,300	16,800	793,800
1951-52	346,000	415,000	31,100	20,700	812,800

The population of 1951-52 consisted of about 42% Europeans and 58% non-Europeans. As the Bantu constituted about 90% of the latter the non-European races will be grouped together. In Table V the data for Johannesburg (1940-1952) are shown for Europeans and non-Europeans (Medical Officer of Health, Johannesburg).

We shall now compare the death rates with those from 3 of the areas in Table I. The Johannesburg figures are used instead of those for the Union so as to reduce the error in the non-European group as much as possible.

The diphtheria death rate has greatly decreased in the 3 places overseas—all having less than one fatal case per 100,000 since 1949. On the other hand, the death rate

TABLE V. DIPHTHERIA MORBIDITY AND MORTALITY (BY RACE) IN THE CITY OF JOHANNESBURG, 1941-52

	Europeans			*Non-Europeans*		
	Notified Cases per 100,000	*Deaths per* 100,000	D/N × 100	*Notified Cases per* 100,000	*Deaths per* 100,000	D/N × 100
1940-41	109·6	4·00	3·68	30·9	1·82	5·70
1941-42	91·9	5·97	6·49	25·2	3·36	13·33
1942-43	131·2	6·87	5·22	57·3	6·64	11·59
1943-44	103·0	4·31	4·22	88·0	13·20	15·00
1944-45	77·1	4·84	6·28	66·6	9·30	13·95
1945-46	50·3	2·17	4·32	71·6	7·17	10·05
1946-47	39·9	1·51	3·79	69·7	7·67	11·00
1947-48	44·2	2·06	4·67	43·0	7·52	17·51
1948-49	44·9	2·04	4·55	40·9	6·21	15·22
1949-50	61·1	2·01	3·27	100·0	14·74	14·78
1950-51	44·1	3·22	7·24	86·6	8·55	9·92
1951-52	53·2	2·31	4·35	69·8	16·49	23·62
Mean			4·85			14·22

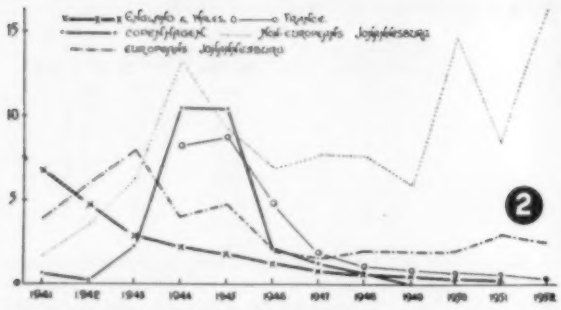

Fig. 2. Diphtheria death rate per 100,000 population overseas and in Johannesburg, 1941-52.

for Europeans in Johannesburg shows no decline,[15] and that of non-Europeans has increased.

Thus it is clear that diphtheria in South Africa in all races presents a serious problem.

Age Incidence. The last question considered was that of age distribution. Fig. 3 shows a cumulative percentage curve of notifications as a function of age based on 175 European and 401 non-European cases from Johannesburg.

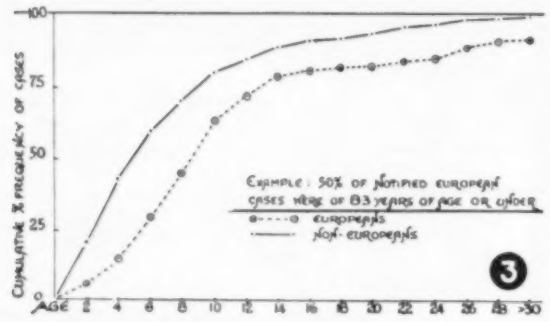

Fig. 3. Age distribution of notified cases of diphtheria, Europeans and non-Europeans, Johannesburg, 1951.

Several conclusions can be drawn from this graph. For non-Europeans 25% of the cases occur before the age of 3 years, 50% before the age of 5½ and 75% before the age of 9, while for Europeans 25% of the cases occur before the age of 5½, 50% before the age of 8½ and 75% before the age of 12½.

This shows that diphtheria in Johannesburg is mainly a disease of children and that the bulk of the cases occur at younger ages among non-Europeans than among Europeans (for example, the middle 50% of the cases occurs between the age of 3 and 9 for non-Europeans and between 5½ and 12½ for Europeans). A possible explanation for this is that the non-Europeans live in more crowded communities than the Europeans, in whom there is less contact among the children until they reach school-going age. We have not yet experienced the shift to older age-groups found in well-immunized communities (Copenhagen,[16] Norway,[17] America [18]).

We may conclude therefore, that in South Africa the age distribution follows the pattern of a non-immunized community, that the incidence rate is higher for younger age-groups among non-Europeans than Europeans and that the primary course of diphtheria immunization must be given early in life, long before school-going age.

Seasonal Variation. A graph showing seasonal variation was constructed from the same material as that used for the age distribution. It agrees with Bayer's observation [9] that diphtheria in South Africa is prevalent during the first 3-4 months of the year. European and non-European curves were parallel.

DISCUSSION

It is quite clear that diphtheria is a serious problem in South Africa.

While morbidity and mortality is much the same all over the Union for Europeans, there is evidence that the urban non-Europeans are attacked more frequently than the rural.

Whatever the immunization rate may be, and whatever the age at which it is carried out, it has not had any influence on the morbidity and mortality in South Africa. At present, it can only be considered as the immunization of individual people and not a nation-wide immunization. Furthermore we are by no means secure against a serious outbreak of diphtheria similar to the epidemic caused by the *gravis* type of *C. diphtheriae* that Copenhagen experienced during the 1939-1945 War. South Africa has been fortunate in having thus far a very small proportion of *gravis* infection.[15] Periodical surveys on the different types of *C. diphtheriae* have shown the same distribution.[19]

Shall we have any control of the disease if secondary epidemiological factors,[20] such as increased virulence, overcrowding, malnutrition or war favour an outbreak?

One of the most recent *gravis* outbreaks occurred in England in 1951:[21] it was calculated that only 26.9% of the local population had received primary courses and 'booster' doses and that only such people could be considered to be adequately immunized at the time of the outbreak.

Godfrey [22] concluded that the minimum immunization rate among children under the age of 5 years must be 30% before diphtheria morbidity could be favourably influenced. Harnish [23] reported that the immunization of 50% of the children in Germany during the war was insufficient to affect the morbidity. The immunization rate from a given area which affects the morbidity favourably will most probably vary inversely to the actual morbidity. Therefore it may be rather high in South Africa.

The final goal, that of the complete eradication of diphtheria, will need an immunization rate in infants from 55 to 80%, and in school children of about 95%.[11, 23]

As stated above, the information collected from the non-European population should be treated with reserve. Although diphtheria is not a rare disease among non-Europeans, it is astonishing that diphtheria epidemics are (as far as we know) infrequent amongst them. Very few reports on this aspect are available: only one report

has been traced from South Africa,[25] in which an outbreak with 236 known cases was described. This observation suggests that there is a certain immunity to diphtheria in the non-European population, a problem which has been discussed by a number of authors.[26, 27, 28, 29] The evidence of the Schick test and antitoxin titrations [30] shows that immunity of non-Europeans is on the same basis as that which exists in Europeans, namely, an antitoxic immunity.

We can conclude that although non-Europeans apparently develop the disease less frequently than Europeans, there is none-the-less an urgent need for active immunization.

It is pathetic to observe that South Africa, which has all the facilities for fighting diphtheria, has not made adequate use of them.

SUMMARY

1. While other countries during the last 15 years have reduced their diphtheria morbidity by 94-100%, it has remained almost unaltered in South Africa.

2. Diphtheria morbidity in Europeans is similar all over the country, is above that for other races in South Africa, and is at present 30 times as high as the corresponding figures for England and Wales.

3. Diphtheria morbidity is probably higher in urban than rural non-Europeans, but in non-Europeans is lower than in Europeans.

4. The case mortality in Europeans is similar all over the country, and is of the same order as that overseas.

5. The case mortality in non-Europeans is about 3 times that in Europeans.

6. The maximum morbidity occurs in earlier age groups in non-Europeans than in Europeans. In both groups it follows the pattern found in a non-immunized community.

7. The present immunization rate in South Africa has been shown to be insufficient.

8. At present there is no guarantee that a serious diphtheria outbreak may not occur in South Africa in the future.

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A TUBERCULIN TESTING AND MASS MINIATURE X-RAY SURVEY OF THE NORTHERN AND EASTERN TRANSVAAL

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The prevalence of pulmonary tuberculosis amongst urban South African Natives is known to be high. Dormer *et al.*[1] in 1943 concluded that 1.5-2% suffer from the active disease, but only 0.25% of rural Natives (in the Natal reserves). In 1953 Schechter [2] after completing a tuberculosis survey of rural Africans in the Bechuanaland Protectorate made the disquieting report that 1.3% suffered from active pulmonary tuberculosis. It appeared possible, therefore, that the prevalence of the disease amongst the rural African population of the Union was also increasing, and a survey of the Native reserves and trust lands of the Northern and Eastern Transvaal was undertaken during July, August and September 1953 to ascertain if this was the case.

AREA SURVEYED

This investigation covered a wide area of the Northern and Eastern Transvaal, including localities in the following magisterial districts: Pietersburg, Potgietersrus,

Groblersdal, Lydenburg, Soutpansberg, Sibasa, Letaba, Pilgrim's Rest, Nelspruit and Barberton (see map in Fig. 1). Mass radiography was carried out on Africans living in these localities, and in most of them tuberculin-testing also.

Fig. 1. Map of part of Transvaal showing Magisterial Districts in which localities were surveyed.

1. The African population (1951) and area of the districts in which one or more localities were surveyed are as follows:

	Population	*Area (square miles)*
(*a*) Pietersburg	195,956	5,280
(*b*) Potgietersrus	119,934	7,592
(*c*) Groblersdal	75,334	2,425
(*d*) Lydenburg	102,358	3,496
(*e*) Soutpansberg (including Sibasa)	218,207	11,214
(*f*) Letaba	126,295	7,475
(*g*) Pilgrim's Rest	86,649	5,580
(*h*) Nelspruit	59,571	3,058
(*i*) Barberton	56,545	1,745

2. The people belong to the following tribes:

Bapedi, e.g. at Bochum in Pietersburg District.
Bavenda, e.g. at Sibasa in Sibasa District.
Bancuna, e.g. Mohlaba's Location in Letaba District.
Lovedu, e.g. Modjadji's Location in Letaba District.
Shangaan, e.g. Pilgrim's Rest District.
Swazi, e.g. Barberton District.

3. *Physical Characteristics.* 'These areas all lie in the middle- or low-veld and are in general not particularly good agricultural land. The climate, however, is suitable for citrus and other sub-tropical crops.'[1] The altitude ranges from 4,224 feet above sea level at Pietersburg, to 460 feet at Komatipoort (Barberton District) on the border between the Eastern Transvaal and Portuguese East Africa. The survey as a whole covered a tract of territory between Sibasa (22° 57′ S) and Komatipoort (25°26′ S). Rainfall showed considerable variation in the areas surveyed; for instance in 1950 the annual rainfall at Pietersburg was 12.86 inches, whereas at Komatipoort it was 28.73 inches.

The areas chosen for investigation often differed markedly with regard to climate and soil conditions. At Nchabaleng in Sekukuniland (Lydenburg District) soil erosion was so far advanced that the whole area resembled a semi-desert. The Native Commissioner of this area wrote in his Annual Report (September 1952), 'Fountains and even wells are drying up and active steps will have to be taken to prevent this district from becoming a desert.' Strydkraal in the Groblersdal District, not very far from Nchabaleng, presented a totally different picture. There, according to the Native Commissioner's Report (June 1952), the Natives were fairly prosperous, there being a fairly high rainfall sufficient for agricultural farming.

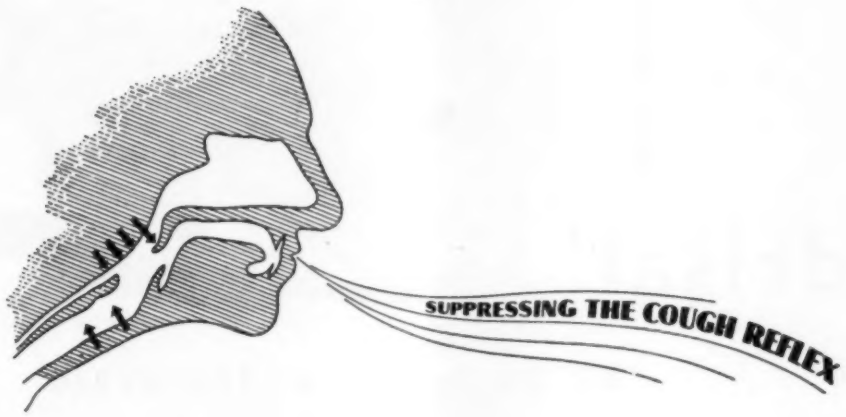
METHOD AND PROCEDURE

Native reserves and trust lands in the Northern and Eastern Transvaal were visited by a mobile mass miniature X-ray unit (chest, 70 mm.) staffed by a driver, clerk, radiographer and medical officer. The African population of the different areas visited was given adequate notice of the arrival of the unit. Before tuberculin-testing and mass-radiography could be embarked upon, it was necessary to assemble hundreds of men, women and children in a place accessible to the 5-ton X-ray van. This prodigious organizational task fell to the lot of the malaria staff of the Union Health Department, in collaboration with the Native Affairs Department. Tuberculin-testing was carried out as well as mass-radiography in 12 localities (Tables I and II). In one of these (Suiping, Pietersburg District) the X-ray results were not of the desired standard and are not included in the records.

1. *The Tuberculin Test*

In localities where tuberculin-testing was carried out as many of the African inhabitants, from the age of 6 months upwards, as could be collected, were tested. They were arranged in family groups, and each group was then tuberculin-tested (10 T.U.) before the X-ray photographs were taken.

At the time of tuberculin-testing particulars regarding name, sex and age of the individual family members were written on special numbered X-ray cards. For purposes of identification the head of the family was given a slip



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of paper bearing the number of his X-ray card, and was told to bring all the family for Mantoux reading in 3 days' time. It was found by previous experience that if all members of the family received numbered bits of paper they were exchanged with relatives, friends and others. A whole family could subsequently be identified when the head person produced his chit, because the cards were all arranged in family groups. The numbers on the X-ray cards were photographed on the miniature X-ray. Mantoux readings were written on the same cards.

The tuberculin test consisted in the giving of an intradermal injection of 0.1 c.c. (i.e. 10 T.U.) of P.P.D. (Purified Protein Derivative, British Ministry of Agriculture; 10 T.U.=.0002 mg.) into the flexor aspect of the forearm at the junction of its upper and middle third, after preliminary cleansing with ether. The procedure followed by Fine [5] during a recent tuberculin-testing survey in Durban industry was adhered to.

The following points should be considered when doing the tuberculin test (they were observed in the present survey):

1. The injection must be intradermal.

2. The quantity of P.P.D. given should preferably be measured by the wheal raised in the skin rather than by the scale marked on the syringe. The wheal raised in the skin by 0.1 cc. of P.P.D. measures approximately 7—8 mm. in diameter.[6] This method of measuring the amount of P.P.D. injected was developed because it was found that most syringes leaked slightly in use, with the result that the quantity of P.P.D. delivered through the needle did not always correspond to the measurements on the syringe.[7]

3. Tests should not be read too soon because of non-specific reactions; 72 hours has been found to be the optimum period between injection and reading of reaction.[8]

4. Induration alone is measured and not the local erythema.

5. There is difference of opinion to-day as to what constitutes a positive reaction. In this survey it was taken to mean an area of induration the transverse diameter of which measured 6 mm. or more.[9]

One of the members of staff, who was instructed in tuberculin-testing, performed all the Mantoux injections. The injections and readings were supervised by a medical officer, but in order to obviate bias all measurements were made by a senior health inspector. In general about 70% of the people tested returned for reading of the test.

2. *Mass Miniature X-ray*

In the 12 localities where the people were tuberculin-tested, after injection of tuberculin a miniature X-ray (70 mm.) was taken of all people aged 3 years and over in the area under investigation. Recall and repeat X-ray of suspect cases of pulmonary tuberculosis was done at the time when the Mantoux were read, i.e. 3 days later. Some of these cases failed to return for reading of the tuberculin-test. In 9 other localities mass X-ray examination was carried out without tuberculin-testing. It is regretted that more confirmatory evidence in the shape of positive sputa and large X-ray 'plates' is not forthcoming. The diagnosis of active pulmonary tuberculosis in this survey was in the majority of cases a radiological one. The Native reserves of the Northern and Eastern Transvaal are under-developed rural areas and anybody who has worked in such areas will realize the difficulties of follow-up.

RESULTS

1. *Tuberculin-Testing Survey*

The tuberculin survey of 3309 Africans of both sexes (exclusive of the 654 at Strydkraal and De Vrede) shows an abrupt increase of tuberculin sensitivity in the 15-19 year age-group (Table I and Fig. 2). At this stage 50% of the group has become infected and the figure remains consistently above 50% for all older age groups. The highest infection rates are encountered between the ages of 40 and 64 years (with the exception of the 50-54 year age-group). The groups with the highest infection

TABLE I. REACTION TO TUBERCULIN TEST (10 T.U.) BY AGE-GROUPS IN 3,309 AFRICANS (BOTH SEXES) FROM DIFFERENT LOCALITIES OF THE NORTHERN AND EASTERN TRANSVAAL

	Lydenburg District			*Potgietersrus District*			*Pietersburg District*			*Sibasa District*			*Letaba District*			*Letaba District*		
Age Group	*Nchabaleng*			*Zebedela Hoofstad*			*Suiping*			*Chugundu*			*Mohlaba Location*			*Modjadji*		
	−	+	*Total*	−	+	*Total*	−	+	*Total*	−	+	*Total*	−	+	*Total*	−	+	*Total*
0—4 ..	82	7	89	44	4	48	83	6	89	17	1	18	24	35	59	10	6	16
5—9 ..	55	11	66	50	3	53	58	7	65	95	8	103	56	21	77	17	8	25
10—14 ..	29	23	52	30	11	41	29	6	35	25	6	31	12	6	18	5	3	8
15—19 ..	9	26	35	5	5	10	17	6	23	8	4	12	8	10	18	6	7	13
20—24 ..	5	18	23	8	2	10	10	2	12	9	7	16	5	7	12	1	6	7
25—29 ..	5	14	19	6	5	11	27	11	38	25	25	50	4	17	21	4	11	15
30—34 ..	6	8	14	2	8	10	15	7	22	23	27	50	3	9	12	2	3	5
35—39 ..	3	14	17	5	3	8	7	5	12	7	8	15	8	16	24	4	11	15
40—44 ..	1	16	17	11	5	16	8	5	13	13	26	39	2	12	14	1	6	7
45—49 ..	2	11	13	6	7	13	9	5	14	1	5	6	5	18	23	3	16	19
50—54 ..	4	5	9	8	4	12	7	2	9	4	2	6	1	10	11	2	9	11
55—59 ..	5	8	13	5	3	8	6	4	10	1	1	2	4	9	13	1	8	9
60—64 ..	1	5	6	2	2	4	2	0	2	9	1	10	0	10	10	0	5	5
65—69 ..	0	6	6	8	2	10	3	2	5	0	1	1	3	5	8			
70—74 ..	0	2	2	3	1	4	2	2	4	1	0	1	0	4	4			
75—79 ..																		
80—84 ..				2	1	3	1	0	1									
All Groups	207	174	381	195	66	261	284	70	354	238	122	360	135	189	324	56	99	155
%+ each locality	45·7%			25·5%			20%			33·3%			58·3%			63·4%		

Age Group	Letaba District Silwana			Letaba District Mamathola			Pilgrim's Rest District Violet Bank			Pilgrim's Rest District Merite			Grand Total	Grand Total	Totals		
	−	+	Total	−	+	Total	−	+	Total	−	+	Total	−	+		%−	%+
0—4	15	2	17	20	3	23	7	16	23	57	5	62	359	85	444	80·8	19·2
5—9	17	7	24	55	7	62	143	21	164	95	18	113	641	111	752	85·2	14·8
10—14	4	4	8	117	21	138	113	30	143	58	20	78	422	130	552	76·4	23·6
15—19	3	6	9	9	4	13	61	80	141	22	15	37	148	163	311	47·6	52·4
20—24	2	8	10	13	4	17	8	16	24	10	7	17	71	77	148	48·0	52·0
25—29	2	2	4	6	3	9	10	9	19	11	13	24	100	110	210	47·6	52·4
30—34	4	5	9	1	6	7	3	10	13	4	11	15	63	94	157	40·1	59·9
35—39	4	2	6	2	5	7	7	9	16	11	9	20	58	82	140	41·4	58·6
40—44	4	10	14	5	4	9	9	16	25	6	7	13	60	107	167	35·9	64·1
45—49	8	13	21	1	1	2	1	11	12	4	9	13	40	96	136	29·4	70·6
50—54				2	4	6	9	5	14	3	7	10	40	48	88	45·4	54·6
55—59				1	2	3	4	5	9	1	5	6	28	45	73	38·3	61·7
60—64							2	12	14	1	5	6	17	40	57	29·8	70·2
65—69	1	1	2	0	2	2	2	2	4	3	1	4	20	22	42	47·6	52·4
70—74				0	1	1	0	3	3	2	1	3	8	14	22	36·4	63·6
75—79				0	3	3	1	1	2				1	4	5	20	80
80—84							0	1	1				3	2	5	60	40
All Groups	64	60	124	232	70	302	380	247	627	288	133	421	2,079	1,230	3,309	62·8	37·2
%+ each locality		48·4%			23·2%			39·2%			31·3%						

TABLE II. REACTION TO TUBERCULIN TEST (10 T.U.) BY AGE-GROUPS IN RANDOM SAMPLE GROUP AT STRYDKRAAL AND DE VREDE

Age Group	Groblersdal Dist. Strydkraal			Pietersburg Dist. De Vrede Location			Grand Total	Grand Total	Totals		
	−	+	Total	−	+	Total	−	+		%−	%+
0— 4	105	6	111	48	6	54	153	12	165	92·7	7·3
5— 9	64	10	74	32	9	41	96	19	115	83·5	17·5
10—14	34	8	42	21	12	33	55	20	75	73·3	26·7
15—19	11	4	15	11	10	21	22	14	36	61·1	38·9
20—24	9	11	20	5	6	11	14	17	31	45·2	54·8
25—29	10	18	28	9	19	28	19	37	56	33·9	66·1
30—34	15	12	27	2	7	9	17	19	36	47·2	52·8
35—39	11	10	21	2	2	4	13	12	25	52·0	48·0
40—44	12	8	20	0	14	14	12	22	34	35·3	64·7
45—49	15	2	17	3	7	10	18	9	27	66·7	33·3
50—54	5	2	7	2	6	8	7	8	15	46·7	53·3
55—59	2	3	5	2	1	3	4	4	8	50·0	50·0
60—64	2	2	4	3	4	7	5	6	11	45·5	54·5
65—69	1	2	3	0	1	1	1	3	4	25·0	75·0
70—74				0	1	1	0	1	1	—	100·0
75—79	1		1				1		1	100·0	—
80—84				4	1	5	4	1	5	80·0	20·0
All Groups	297	98	395	144	106	250	441	204	645	68·4	31·6

rates also contain the largest number of cases of active pulmonary tuberculosis. Positive reactors to tuberculin were seen in 37.2% of the people tested (all ages).

Another graph was drawn reflecting the degree of tuberculin sensitization at De Vrede (Pietersburg District) and Strydkraal (Groblersdal District) as these were the only two places where more than 90% of the people tested returned for reading of the Mantoux reaction. In this group 31.6% out of 645 people tested manifested allergy to tuberculin (Table II and Fig. 3). It would seem that the sampling was correct, for there is a regular step-like rise in the form of the graph in the younger age-groups, though the figures for older age-groups are unreliable owing to the small numbers. This group at Strydkraal and De Vrede can be accepted as constituting a random sample. The percentage of tuberculin positivity only rises above 50% when the 20—24 year age-group is reached.

Occasionally more people appeared for tuberculin-testing than for X-ray. These were the 'conscientious objectors', who desired only what they termed 'health-giving injections' and refused to go into the X-ray van.

2. *Mass X-ray Survey*

Out of a total of 7569 Africans X-rayed evidence of active pulmonary tuberculosis was found in 60 (0.78%). Of these cases 35 were males and 25 females, thus showing a higher prevalence amongst males. Only 2,966 males underwent X-ray examination, as opposed to 4,603 females (Table III). In all 301 (about 4%) 'abnormal' X-rays were detected. These included not only cases of active tuberculosis but also a large variety of other conditions, such as bronchiectasis, inflammatory conditions of the lung, aneurysm of the aorta, substernal thyroid, cervical rib etc. Table IV gives details of the

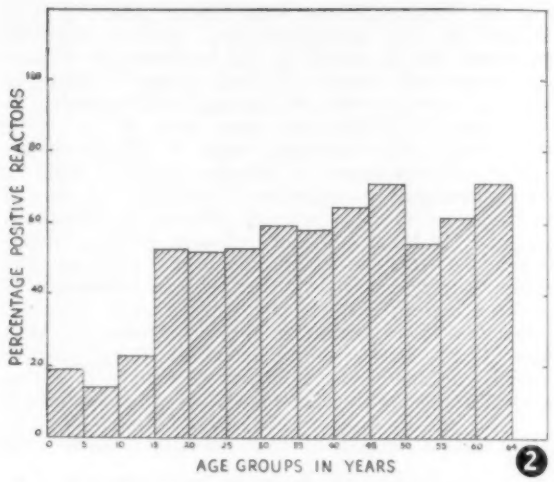

Fig. 2. Graphic representation of Tuberculin Survey (10 T.U.) on 3309 Africans from Different Districts of Northern and Eastern Transvaal.

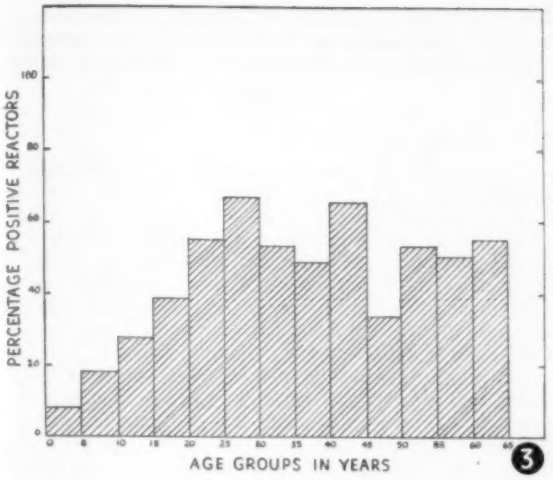

Fig. 3. Graphic representation of results of Tuberculin Test (10 T.U.) on random sample group of 643 Africans at Strydkraal (Groblersdal District) and De Vrede (Pietersburg District).

60 cases found to be suffering from active pulmonary tuberculosis.

Particular attention was paid to the occurrence of aortic aneurysm, substernal thyroid and cervical rib. The radiography revealed 11 cases of aortic aneurysm, 8 cases of substernal thyroid, and 40 cases (0.53%) with cervical ribs. In the latter group cervical ribs were detected on both sides in 18 people, on the right in 13 and on the left in 9. The percentage of cervical ribs amongst the rural African population is thus high, when compared with figures obtained by Crimm [10], who in a five-year survey on 70,877 people in the United States found only 0.16% of congenital rib-abnormalities. If all additional congenital rib-abnormalities found on the survey now under report, such as bifid ribs, absent ribs etc., were included, the percentage obtained would be much higher.

Most of the cases with substernal thyroids came from the Pilgrim's Rest, Nelspruit and Barberton Districts Half of them were detected at Mahushu (Nelspruit District) and Figtree (Barberton District). The total number X-rayed at these two places was only 411.

TABLE III. RESULTS OF X-RAYS BY AGE AND SEX IN 7569 AFRICANS IN RURAL AREAS IN NORTHERN AND EASTERN TRANSVAAL

	Males			*Females*			*Total: Both Sexes*		
Age-Group	*Normal X-rays*	*Abnormal X-rays*	*Total*	*Normal X-rays*	*Abnormal X-rays*	*Total*	*Normal X-rays*	*Abnormal X-rays*	*Total*
3— 4	397	9	406	364	4	368	761	13	774
5—14	1401	30	1431	1406	40	1446	2807	70	2877
15—24	324	7	331	744	30	774	1068	37	1105
25—34	147	4	151	818	28	846	965	32	997
35—44	230	5	235	614	25	639	844	30	874
45—54	192	26	218	260	26	286	452	52	504
55—64	116	27	143	150	14	164	266	41	307
65—74	29	15	44	53	8	61	82	23	105
75—	6	1	7	17	2	19	23	3	26
Totals	2842	124	2966	4426	177	4603	7268	301 (4%)	7569

TABLE IV. CASES OF ACTIVE PULMONARY TUBERCULOSIS

	Males		*Females*		*Total*	
Age-Group	*Number of Cases*	*Cases per 1000 Persons*	*Number of Cases*	*Cases per 1000 Persons*	*Number of Cases*	*Cases per 1000 Persons*
5—14	2	1·4	1	0·7	3	1·0
15—24	1	3·0	6	7·7	7	6·1
25—34	2	13·2	3	3·5	5	5·0
35—44	1	4·2	3	4·7	4	2·3
45—54	15	65·8	5	17·5	20	39·7
55—64	8	55·9	6	36·6	14	45·5
65—	6	117·6	1	12·5	7	54·4

It is felt that this indicates that endemic goitre exists in both Nelspruit and Barberton Districts. The significance of these findings will be discussed in a subsequent paper.

DISCUSSION

1. *Tuberculin-Testing Survey*

The results of tuberculin-testing on 3,309 people revealed that 37.2% were Mantoux positive. Of the random sample group of Strydkraal and De Vrede 31.6% were positive reactors out of a total of 645 tested.

The percentage of tuberculin sensitization amongst Africans of the Northern and Eastern Transvaal seems to be much lower than for other rural areas in the Union. Allan [11] (1932) tested 6,508 Africans in the Transkei and Ciskei and found 66% to be tuberculin positive. Dormer *et al*,[1] quoting the results of their Natal survey of 1938, stated that 40—50% of rural Africans were tuberculin positive. Their investigations did not include children between 6 months and 4 years old, as the present survey did, and the inclusion of this youngest age-group would presumably have lowered the percentage of positive results obtained. Edwards and Palmer [9] in 1953 placed the technique of tuberculin-testing on a rational basis, but previous to this many different techniques were employed. In the present survey Edwards and Palmer's method was used, and although it is possible that variations in tuberculin-sensitivity amongst rural Africans living in different parts of South Africa may occur, the use of different criteria in both the performance and reading of the Mantoux test might possibly account for apparent regional variations in tuberculin-sensitivity in this country.

A greater percentage of tuberculin-positive reactors is encountered amongst urban Africans. Dormer *et al* [1] found that 70—80% fell into this category. In 1954 Fine [5] reported on the results of a survey in Durban industry, when 4902 adult Africans from the age of 20 years upwards were tuberculin-tested with 10 T.U. and 72.3% we found to be positive. The present survey, on rural Africans, established that out of a total of 1250 belonging to the same age-group (20 years upwards) and tested by the same method, 57.2% were positive.

Certain tuberculin surveys conducted in rural areas outside the Union of South Africa also seem to show a higher percentage of positive reactions than was obtained in the present survey. Davies [12] in 1952 reported on a tuberculosis survey in Mbulu district of Tanganyika in which 47% of the people examined in this area were tuberculin-positive. In the Australian State of Queensland 53.8% out of 6,626 aborigines examined reacted positively to tuberculin (Macken, [13] 1952).

Children are a group that have a special interest for the epidemiologist. The pattern of tuberculin allergy 'has been taken as the guide, however imperfect, to the effectiveness of B. C. G. vaccination' (Edwards and Palmer [9]), and it is mainly children that receive B.C.G.

Of the 444 children between the ages of 6 months and 4 years, in the group of 3,309 tested 19.2% were positive tuberculin-reactors. A positive tuberculin reaction in this age-group usually denotes active primary tuberculosis.[14] This finding is not corroborated by the random-sample group at Strydkraal and De Vrede. In the latter group only 7.3% of children in this age-group gave positive Mantoux reactions; but the results for the 5—9 and 10—14 year age-groups tally roughly in both groups. Study of Mantoux surveys conducted amongst non-Europeans in other parts of Africa and other parts of the world shows that tuberculin-allergy varies in different places and in different groups of people. Again it must be remembered that the technique of doing the test, as well as of reading it, has varied with different investigations. Dormer [15] in Natal found 50% of rural African children in the 5—9 years age-group to be positive reactors. The present survey has shown that African children of a similar age-group in the Northern and Eastern Transvaal reveal a far lower percentage of positive reactors, and at most 17.5% show positive reactions. Rural Native school children from Southern Rhodesia show in general a still lower percentage of positive reactions:[16]

NATIVE SCHOOL CHILDREN, SOUTHERN RHODESIA (WEBSTER 1954)

Age-Groups (years)	*Percentage Positive Reactors*		
	Urban	*Semi-Urban*	*Rural*
5— 7	18·6	10·0	5·6
8—11	27·5	15·8	10·8
12—15	28·4	24·1	11·9
16—19	42·2	36·0	17·4
20—	76·9	100·0	—
Total	29·0	25·9	11·3

In the Southern Rhodesian survey 16,000 children of school age were tested using an intradermal dose of 0.1 cc. of 1/5000 Old Tuberculin (B.W. & Co.). In Kenya the results of a tuberculin survey were reported in 1951 by Haynes, [17] who used 1/1000 Old Tuberculin to conduct the investigation:

MANTOUX SURVEY (AFRICAN CHILDREN) IN KENYA (HAYNES, 1951)

Age-Groups (years)	*Percentage Positive Reactors*		
	Rural	*Nairobi School Children*	*Mombasa Township Children*
4— 6	8·5	15·5	25·0
7—12	18·5	44·5	37·0
13—18	37·8	60·7	70·0
Total	27·2	49·1	45·0

Urban African children show higher percentages of positive reactions than their rural counterparts. [15, 16, 17]

Tuberculin Sensitivity According to Induration. It is advisable not to consider tuberculin sensitivity in terms of negative and positive reactors only. Other aspects of tuberculin sensitivity are brought to light by studying graphs reflecting frequency distributions of different sizes of the indurated area of the tuberculin reaction according to transverse diameter. (Edwards and Palmer [9]). The histogram for the Northern and Eastern Transvaal (Fig.4) shows that there is a large group of children (65.5%) exhibiting no sensitivity to 10 T.U. In this respect, the extreme left-hand portion of the histogram resembles

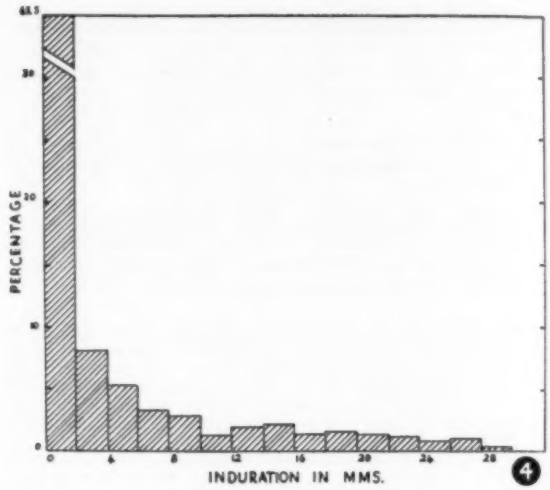

Fig. 4. Frequency distributions of diameter of Mantoux reactions to 10 T.U. among children in the Northern and Eastern Transvaal

that drawn by Edwards and Palmer[9] for Denmark (Fig. 5) during preparation of their monograph for WHO on B.C.G. vaccination. The WHO histograms reflect for the most part the results of Mantoux reaction in children between 7 and 14 years of age. The present survey, however, was done on children between the ages of 6 months and 14 years, and this might in part account for the high percentage of children without sensitivity to tuberculin. Generally, the present histogram resembles that drawn by WHO for a southern rural portion of India. In the latter case 5 T.U. was the dosage employed in doing the Mantoux, as opposed to 10 T.U. in this survey.

Of the present group of children tested relatively few exhibit what is known as 'high-grade' tuberculin sensitivity', viz. they do not react strongly to weak doses of tuberculin in the neighbourhood of 5—10 T.U. In this respect there is a resemblance to the Indian and Danish patterns. The other point of importance is the fact that there is really no clear division of the population into two groups with different response to the Mantoux reactions, as for instance in Mexico where one group exhibits little or no reaction and the other (in the right-hand portion of the histogram) exhibits strong reactions with fairly wide diameters.

2. *Mass X-Ray Survey*

Sixty cases of active pulmonary tuberculosis were detected out of a total of 7569 Africans X-rayed. Most cases (over two-thirds) of active disease were found in people of 45 years and over, the disease rate in males of this group (per 1,000 people) being far higher than for females. Over half of all the cases detected were in males of 45 years and over. Thus the disease rate in the older age-groups, and especially in males, is literally enormous. This can be accounted for by the fact that the majority of able-bodied males make their way to the towns and cities to seek work. A drastic change ensues from a peaceful pastoral existance to one associated with arduous work, fatigue, poor nutrition and overcrowding in slum or shack locations. In addition to these factors 'concomitant diseases such as syphilis, alcoholism, amoebic dysentery etc. soon combine to precipitate a particularly virulent form of tuberculosis which kills the victim rapidly.'[18] Dormer in 1948[15] stated that the death rate from tuberculosis amongst industrial Natives was 900 per 100,000, perhaps the highest rate in the world. The hard city and town life leads not only to an increased mortality from tuberculosis but also to increased morbidity. Those African males who do not succumb to the disease may take it back with them to their peaceful rural homes, there to infect wives and children. In this way the prevalence of pulmonary tuberculosis in rural areas increases. An African male will often disregard what to the European are grave premonitory symptoms of pulmonary tuberculosis and continue working. He will often prefer to return home instead of receiving treatment in a tuberculosis hospital.

Study of the numbers of people X-rayed shows great disparity between the numbers of males and females

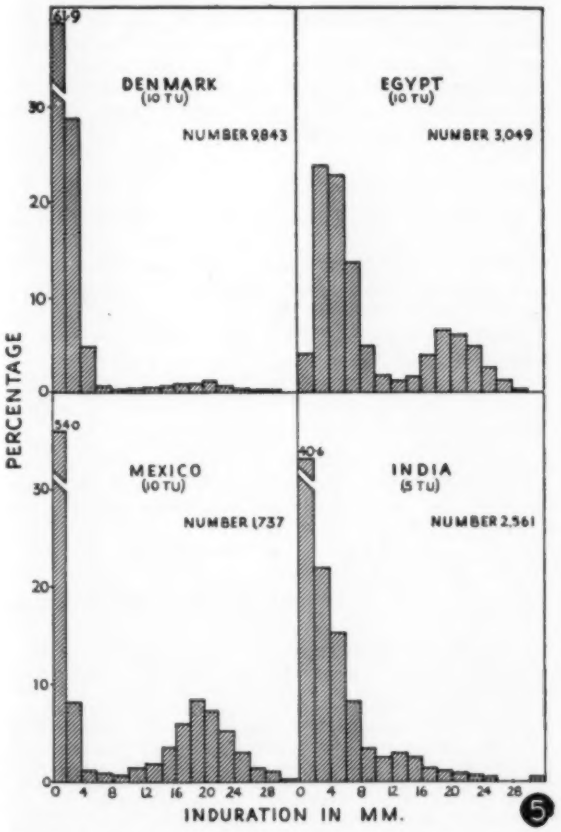

Fig. 5. Frequency distributions of diameter of pre-vaccination Mantoux reactions to 10 (or 5) T.U. among school-children in Denmark, Mexico, Egypt and India (from WHO Monograph

between the ages of 15 and 44 years, the females in these age-groups exceeding the males by about 2 or 3 to 1. The absent males are the able-bodied ones working in urban districts and in many cases probably dying there. Thus the disease rate in rural males between the ages of 15 and 44 years may be misleading. Males above the age of 44 years with pulmonary tuberculosis constitute probably a disabled group who are no longer able to work in the cities and towns.

Of the active cases 23 (almost 40%) were detected in the Pilgrim's Rest, Nelspruit and Barberton Districts at Violet Bank (10 cases) and Merite (6 cases), Mahushu (4 cases) and Figtree (3 cases). Only 1742 people from these areas were X-rayed—less than a quarter of the total number. It is thus obvious that there is a higher prevalence of pulmonary tuberculosis amongst Africans living in the Eastern Transvaal.

These figures constitute preliminary morbidity studies of pulmonary tuberculosis amongst Africans of the Northern and Eastern Transvaal. It is felt, however, that they give an indication that pulmonary tuberculosis amongst rural Africans in the Union is increasing. There appears to have been an increase in the prevalence of the disease since Dormer *et al.* (1943) [1] stated that only 0.25% of rural Africans had active disease. In 1947 [18] the Annual Report of the Department of Health drew attention to the fact that 'the evidence points to an increasing amount of tuberculosis in non-Europeans in the rural areas because of the drift of ill and infectious cases from urban to tribal homes.'

SUMMARY

1. A tuberculin-testing survey (10 T.U.) carried out on 3309 rural Africans living in the Northern and Eastern Transvaal revealed positive tuberculin reactors in 37.2%

2. A random sample group comprising 645 people from the Groblersdal and Pietersburg Districts of the Northern Transvaal, contained 31.6% of positive reactors to tuberculin.

3. The pattern of tuberculin allergy amongst rural Northern and Eastern Transvaal Natives resembles that for rural districts of Southern India.

4. Mass-radiographic survey of 7569 rural Africans from ten districts in the Northern and Eastern Transvaal disclosed 60 cases of active pulmonary tuberculosis (0.78%).

5. Judging by these preliminary findings the prevalence of pulmonary tuberculosis amonst rural South African Natives, appears to be increasing and the disease rate amongst males of the older age-groups is unbelievably high.

6. Cervical ribs are not uncommonly found amongst South African Natives, as evidenced by the finding of 40 cases (0.53%) on the present survey.

7. Substernal thyroids were detected mainly in Africans from the Eastern Transvaal districts of Nelspruit and Barberton—a significant pointer to the existence of endemic goitre in these areas.

Thanks are due to Dr. B. A. Dormer, Medical Superintendent of King George V Hospital, for permission to submit this article for publication. I would like to express my appreciation to Dr. S. H. Annecke, Deputy Chief Health Officer, Northern Transvaal, and his staff, as well as the Chief Native Commissioner for the Northern Transvaal and his staff; without their assistance this work could not have been done. I am very grateful to Dr. A. M. Adelstein for advice. Miss D. P. A. Day has been of the greatest assistance in preparing the histograms seen in this paper. Mr. D. J. J. Mostert has kindly done the photographs shown.

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RESEARCH INTO PROBLEMS OF THE AGEING

The Trustees of the Ciba Foundation for the Promotion of International Co-operation in Medical and Chemical Research have decided to devote a sum of £5,000 annually for the next 5 years to enable the Foundation to support and promote experimental work in the field of Gerontology. While they are aware that investigations into many of the problems of the ageing are under way, they consider that the scientific aspects of the subject offer such a wide field for well conceived research on basic problems that their encouragement at this time would be amply justified.

This new and additional activity will be carried out on 5 main lines:

(*a*) *Conferences.* One or two international conferences a year on the lines of those normally held at the Foundation, to be published in a series of volumes similar to the Foundation's 'Colloquia on Endocrinology'.

(*b*) *Discussion Meetings.* Guests staying in the Foundation with special knowledge in the field will be invited to open informal discussion meetings.

(*c*) *Lectures.* The Annual Ciba Foundation Lectureship will be open to distinguished workers in the field.

(*d*) *Travelling Fellowships.* Details of these have not yet been fully worked out, but they may well be used to supplement the awards, in suitable cases, made under (*e*) below.

(*e*) *Awards.* At least for a trial period of a few years, awards will be made annually for experimental work relevant to the pro-

blems of Ageing, as evidenced by descriptive papers and judged by an international panel of distinguished scientists.

AWARDS FOR 1954-1955

Details of the conditions for these awards for 1954-1955 may be obtained on application to the Director and Secretary to the Executive Council of the Ciba Foundation, Dr. G. E. W. Wolstenholme, O.B.E., 41 Portland Place, London, W.1, but in general candidates should note:

(*a*) Five awards, of an average value of £300 each, are available for the period 1954-1955. The announcement of awards will be made in July 1955.

(*b*) Entries must be received by the Director and Secretary of the Foundation not later than 28 February 1955.

(*c*) Entries will be judged by an independent international panel of distinguished scientists who will advise the Executive Council of the Foundation on their findings and will also have power to recommend variation in the size and number of the awards according to the standard of entries. The decisions of the Executive Council will be final.

(*d*) In making the awards preference will be given to younger workers.

(*e*) The work submitted should be unpublished (but may be under consideration for publication) at the closing date for entries.

(*f*) The papers may be in the candidate's own language, but a summary in English not exceeding 500 words must be attached.

(*g*) Where there is one or more co-author, the name of the leading author should be indicated; it is to him that the award will normally be made, and it will be left to his discretion to share this award appropriately with his co-authors.

ASSOCIATION NEWS : VERENIGINGSNUUS

CLINICAL CASES AT MEETING OF THE GRIQUALAND WEST BRANCH

A meeting of the Griqualand West Branch of the Medical Association of South Africa was held in the Board Room of the Kimberley Hospital on 29 July 1954. Dr. J. E. Vaughan Jones was in the Chair and 16 members attended.

On behalf of the Branch the chairman congratulated Dr. J. P. Collins on being re-elected unopposed as Branch Representative for Federal Council.

Several other matters of business were discussed.

The rest of the evening was occupied by discussion of several interesting cases. Questions were put to the various speakers and these were duly answered.

Dr. H. F. Lowenthal presented three interesting cases of lumps in the left hypochondrium two of which had bizarre presentations and the third was fairly typical.

Case 1. Mr. B., aged 65 years, presented with sore throat. He tired easily and had lost 5 to 6 lbs. in weight over the last few months although he had been on holiday for 8 weeks. On examination he had slight pharyngitis and on palpating his abdomen a very large tumour was felt. This occupied the whole of the left flank, and extending almost to the pubis. It was roughly kidney-shaped, easily ballottable from the flank, and was of hard consistency and not tender. I.V.P. showed a defect of the lower calices with spiral-like deformities of the upper ones. A diagnosis of kidney tumour hypernephroma? single cyst of the kidney was made.

An aortic arterogram could not be undertaken. At operation a huge tumour hanging on to the upper pole of the left kidney was removed. The mesenteric vessels were enormously congested; the renal vein was as large as any ordinary portal vein and the artery abnormally small. The vein was tied off before any manipulation of the tumour was undertaken. This tumour was 16 x 12 x 8 cm. and was typically hypernephroma. A subsequent X-ray of the bones and lung fields was negative and the patient made an uninterrupted recovery.

Case 2: Mr. R., aged 58 years, complained of abdominal discomfort and some tenderness over the splenic flexure, with increasing constipation over the past 6 or 7 weeks. He also complained of excessive tiredness and some general weakness. On examination the abdomen was slightly distended and a mass could be felt just under the rib margin on the left-hand side; it could not be ballotted from the back and was thought to be a carcinoma of the splenic flexure. Sigmoidoscopy was negative.

Barium enema revealed that the splenic flexure did not push down and also splayed outwards. The radiologist reported a retro-peritoneal tumour not of kidney origin. A large kidney tumour involving the upper pole of the kidney was found. The spleen was perched on the antero-superior surface of the kidney mass, which was probably the reason for the depression of the splenic flexure and the kidney mass splaying out of the gut.

Case 3: The third case was of a young woman of 22 years who complained that she had been jaundiced for the last 4-5 weeks and that she was feeling tired and listless. This was her third attack of jaundice, the first having appeared when she was about 4 years old and the second at puberty. She also offered the information that she had had many attacks of anaemia, for which she had received both iron and liver therapy.

On examination the liver could be tipped about two fingers below the costal margin and the spleen was quite easily palpable. As a result of this finding, the following investigations were undertaken: Fragility of reds was increased; van den Bergh—an indirect positive; serum bilirubin was 24 mg.%; blood count was unequivocal and showed no spherocytes or microcytes; the reticulocytes were increased; no bile pigment or salts in the urine, but urobilinogen.

A diagnosis of acholuric jaundice was made and splenectomy was advised. This was undertaken and at operation the gall bladder was found to contain stones and was removed. The patient made an uninterrupted recovery.

It is interesting that a sister has had several attacks of jaundice and at the moment is under treatment for anaemia; her mother has had two or three attacks of jaundice during her life.

Dr. M. Kahn presented a case of a Native female who was admitted as an acute abdomen with tremendous distension and tenderness. The presumptive diagnosis was ovarian cyst. When the abdomen was opened, the surgeon (Dr. Lowenthal) suggested that the condition was a pseudomyxoma of the peritoneum. A large amount of watery fluid and masses of thick gelatinous material were evacuated. The pathological report confirmed the diagnosis. It was stressed that recurrences were likely and repeated laparotomies were possible.

Dr. G. T. Tandy presented a case history of presumptive acute pericarditis which cleared up after conservative treatment.

Dr. U. F. McKenzie described the case histories of 2 patients who presented as acute appendicitis. On laparotomy the first case had a fish bone penetrating from the ilium just proximal to the appendix. The second case had a Meckle's diverticulum.

Mr. J. D. Visser described two cases of haemothorax due to a stab wound and bullet wound in chest respectively. The first was treated conservatively and cleared up completely in about a year. The other needed frequent aspirations at first, but cleared afterwards, also with conservative treatment.

The meeting was closed with a vote of thanks to the Chair.

MEETING OF THE WORCESTER DIVISION

A well-attended meeting of the Worcester Division of the Cape Western Branch of the Medical Association of South Africa held at Worcester Hospital on Friday, 16 July 1954, was addressed by Dr. A. Wilsen, Medical Officer of Health for Worcester, Dr. C. Franszen, Clinical Medical Officer for Worcester and Dr. E. Weller, Hospital Medical Officer for Worcester.

These practitioners presented case records illustrating the differential diagnosis of Meningitis.

ATTENDANCE AT COURT PROCEEDINGS BY MEDICAL OFFICERS

Following an approach to the Minister of Justice by the Federal Council of the Medical Association of South Africa (at the request of the Northern Transvaal Branch) on the subject of *Attendance at Court Proceedings by Medical Officers*, the following letter from the Secretary of Justice has been received by the Secretary of the Association:

'With reference to your letter of 29 January 1954, addressed to the Honourable the Minister of Justice, I wish to inform you that judging from reports received from the various Attorneys-General and the Solicitor-General, it is clear that the inconvenience and possible hardship which may be occasioned when a medical practitioner is required to attend court proceedings as a witness, are fully appreciated by these officers and other officers under their control and that every endeavour is being made to ensure that medical practitioners are timeously subpoenaed and allowed to give their evidence as early as possible.

'The Attorneys-General and the Solicitor-General have nevertheless again apprised Public Prosecutors in their respective areas of the wishes of your Association and instructed them to give effect thereto, whenever possible. Directions are also being issued to all Prosecuting Counsel proceeding on Circuit to lead the evidence of medical practitioners as soon as possible.

'With regard to the representations concerning the findings of courts in inquest proceedings, it is pointed out that there is no provision in law whereby an appeal could be noted against such findings. The object of inquest proceedings is merely to determine the cause of the death of the person concerned and to enable the Attorney-General or the Solicitor-General to decide whether or not criminal proceedings should be instituted against any person for causing the deceased person's death.

'The finding of an inquest court is endorsed on the record of the proceedings which is open for inspection by the medical practitioner concerned and by any other person and should the medical practitioner disagree with the finding, there is nothing which prevents him from conveying his views to the Attorney-General or the Solicitor-General, as the case may be, who will then take such steps as he may deem expedient. In the circumstances there is no necessity to notify the medical practitioner of the time and date when the finding is to be given by the court.

'The delay in replying to your letter is due to the fact that the Department entered into extensive correspondence with the Attorneys-General and the Solicitor-General regarding the matters raised by you.'

PASSING EVENTS : IN DIE VERBYGAAN

Ultra-violet Therapy in Rheumatic Diseases. Hanovia, Limited, Slough, England, have published a symposium on ultra-violet counter-irritation therapy in rheumatic and allied diseases, consisting of 6 two-column quarto pages. It includes a historical survey and a consideration of indications and technique. Besides general considerations it refers specifically to osteo-arthritis, especially of the knees, spine, shoulder and elbow, rheumatoid arthritis, panniculitis, sciatica and lumbago, fibromyalgia, tennis elbow, and strains of the sacro-iliac joint. Messrs. Hanovia intimate that they are prepared to send free copies on request to medical enquirers.

* * *

Big Medical Section at Utrecht Autumn Fair. An interesting feature of the coming Utrecht Autumn Fair from 9 to 16 September will be the extensive medical section, including instruments for scientific and industrial laboratories.

This very representative section, which gives a good picture of the technical and scientific progress in the field of instruments and apparatus for hospitals, universities and laboratories, will be housed in a new exhibition hall to be put into use on the occasion of the Fair. The hall, having a floor space of 77,000 square feet, will exclusively be occupied by the medical section, so that a harmonious display can be realized.

The number of exhibitors is 229, a substantial increase against last year, when 165 firms were represented. The exhibits originate from 11 countries, viz.: U.S.A., Great Britain, Western Germany, Switzerland, France, Belgium, Austria, Lichtenstein, Denmark, Sweden and the Netherlands.

* * *

The Nutrition Society. The following programme has been arranged for the symposium to be held by the Nutrition Society at The Middlesex Hospital Medical School, London, W.1, on 20 November 1954 on the *National Food Survey of Great Britain:* Chairman, Dr. N. C. Wright (London). Mr. W. L. Readman (London), 'Survey technique and methods'. Mr. J. A. C. Brown (Cambridge), 'Equivalent adult scales'. Mr. C. J. Brown and Mr. S. Clayton (London), 'The national diet after 14 years of rationing'. Mr. A. H. J. Baines and Miss D. Hollingsworth (London), 'The diets of old people'. Miss G. M. Warnock and Mrs. E. L. Gibson (London), 'The diets of families with and without children'. Dr. I. Leitch (Bucksburn), 'General conclusions'.

On Saturday, 23 October, the Scottish Group of the Nutrition Society will hold a symposium at Dundee on 'Disorders of the Alimentary tract and their Nutritional Effects': it is hoped to include one or more papers on food allergies.

* * *

Dr. M. M. Posel of Lister Building, Johannesburg, is leaving for a short visit to England and the Continent and will attend the International Congress of Internal Medicine in Stockholm and also the Congress of American Chest Physicians in Barcelona.

* * *

Union Department of Health Bulletin: Report for the 7 days ended 29 July 1954:

Plague, Smallpox: Nil.

Typhus Fever: Natal: One (1) Native case in the Louwsburg district. Diagnosis confirmed by laboratory tests.

No further cases have been reported from the Harding district since the notification of 1 July 1954. This area is now regarded as free from infection.

Cape Province: One (1) fatal Native case at Emgwali in the Stutterheim district. Diagnosis confirmed by laboratory tests.

No further cases have been reported from the Mqanduli district since the notification of 1 July 1954. This area is now regarded as free from infection.

Epidemic Diseases in other Countries:

Plague: Nil.

Cholera in Chalna, Chittagong, Dacca (Pakistan); Calcutta (India).

Smallpox in Mogadiscio (Somalia); Bombay, Calcutta, Cochin, Delhi, Kanpur (India); Hanoi, Phanthiet, Saigon-Cholon (Viet-Nam).

Typhus Fever in Cairo (Egypt); Baghdad (Iraq).

BOOK REVIEWS : BOEKRESENSIES

LIVING HAPPILY WITH A 'HEART'

Living Happily with a 'Heart'. By Tom Clarke. (Pp. 132. 7s. 6d.) London: Victor Gollancz Ltd. 1954.

Contents: 1. Introduction. 2. The Story of My Heart. 3. First Round of the Battle. 4. 'Come-Back' that Failed. 5. My Life in the Woods. 6. Fitting in to Rural Life. 7. Fleet Street 'Sensation'. 8. 'Cases' from my Postbag. 9. Not too old at 70. 10. 'Doctor Country'.

Tom Clarke, formerly Editor of a London daily newspaper, one of the late Lord Northcliffe's 'bright young men' and a journalist famous in Fleet Street, is now 71. Ten years ago, while broadcasting in London, he had a coronary thrombosis. His book is the story of how he has since 'lived with his heart' and, heeding the advice of his doctors, has accepted a completely new routine of living—simple diet, no excitement, country air.

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Of his recovery he writes: 'It was not so much my victory as that of the doctors and nurses. My part under their inspiration was to overcome the fear, so often needless, that grips the minds of far too many men and women, young and old alike, rich and poor alike, when they learn they have an ailing heart.

'It is no business of a layman to meddle in the physiological mysteries of the heart. I have no intention of doing so. All I have in mind is to urge the value of Doctor-Patient co-operation in this great modern Battle of the Heart and to present, not a doctor's "case history" but a grateful patient's counterpart'.

On the matter of fear neurosis the author writes: 'In how many minds does there still lurk a foolish fixed delusion of "inheritance" of this or that taint, mental as well as physical? Yet in how many cases would a frank talk with a doctor show how medical science and research have dispelled the superstition which lives on only in old wives' tales'.

W.F.

PERIPHERAL CIRCULATION

Peripheral Circulation in Man: A Ciba Foundation Symposium. Edited by G. E. W. Wolstenholme, O.B.E., M.A., M.B., B.Ch. and Jessie S. Freeman, M.B., B.S., D.P.H. (Pp. 219 + xi, with 72 illustrations. 25s.) London: J. & A. Churchill, Limited. 1954.

Contents: 1. Chairman's Opening Remarks. 2. A Critical Survey of Methods Available for the Measurement of Human Peripheral Blood Flow. 3. The Venous Occlusive Technique for Measurement of Finger Blood Flow. 4. The Electrical Strain Gauge Method for Measurement of Peripheral Circulation in Man. 5. The Transparent Chamber Technique for Observation of the Peripheral Circulation, as Studied in Mice. 6. Differential Secretion of Noradrenaline and Adrenaline from the Suprarenal Gland. 7. The Effect of Adrenaline and Noradrenaline on the Blood Flow Through Human Skeletal Muscle. 8. Changes in Peripheral Circulation with Exposure to Cold. 9. The Response to Cold in the Range 0-10°C. 10. Factors Concerned in the Regulation of Skin Blood Flow. 11. Blood Flow Response to Temperature and Other Factors. 12. Observations on the Neurohistology of Cutaneous Blood Vessels. 13. Reflex Control of the Cutaneous Circulation. 14. The Problem of Vasomotor Denervation. 15. Vascular Reactivity Following Symphathectomy. 16. Some Anatomical Observations on Peripheral Ischaemia in Man. 17. The Mechanism of the Raynaud's Phenomenon in Patients with High Serum Titres of Cold Agglutins. 18. Visceral Activity and Peripheral Circulation in the Spinal Man. 19. Some Aspects of Functional Disorders of the Circulation. 20. Chairman's Closing Remarks. Index.

This is no bedside book. If the experience of your reviewer is any guide it necessitates a hard upright chair and possibly a wet towel. It is difficult to imagine a more concentrated dose of scientific information, and this way of publishing original work is undoubtedly of the greatest possible value to research workers.

The book is the result of an international conference of about 30 scientists organized by the Ciba foundation in May 1953. No praise could exceed what is due to the Foundation for sponsoring so valuable an occasion. A carefully limited number of participants was selected to encourage intimate discussion. The editing of the various discussions has been skilfully done and as printed they are free from verbosity and irrelevance. Inevitably, when the subject under review is on the very fringes of modern research, some of the more astute questions posed by the participants could not be answered, and these questions will constitute a challenge to workers in the field all over the world.

It would be fruitless to attempt detailed description of the contents of this book; they are summarized above. It constitutes a gargantuan feast for any person qualified to follow the many intricate points of technique and interpretation of experimental findings which are here discussed. The main impression left on the mind of the reader is that the old problem of altering the 'normal' by experimental conditions has by no means been overcome. Despite the enormous amount of work that has been done in this field, one can only echo Dr. Edholm's concluding remarks: '. . . . we are still unable adequately to describe the architecture of the vascular system. The detailed arrangement of the anatomy and nerve supply of the small blood vessels . . . . requires further study.'

E.N.K.

THE THYROID

The Thyroid: A Physiological, Pathological, Clinical and Surgical Study. By T. Levitt, M.A., F.R.C.S.(Eng.), F.R.C.S.(Ed.), F.R.C.S.I. (Pp. 606 + xxiv, with 43 photographs. £5 5s.) Edinburgh and London: E. & S. Livingstone Limited. 1954.

Contents: Part I. The Natural History of Thyroid Disease. 1. The Rôle of Epithelial, Lymphoid and Fibrous Tissues. 2. The Thyroid Cycle. 3. A Clinico-Pathological Study of 2,114 Thyroidectomies. 4. The Six Phases in Perspective. 5. The Status of Lymphadenoid Goitre, Hashimoto's and Riedel's Diseases. 6. Aetiology. 7. Discussion on the Aetiological Relationships Between the Phases. 8. Lymphocytic Deposition in the Other Endocrine Glands. 9. The Hyperthyroid Constitution. 10. Recurrence. 11. Spontaneous Retrogression. 12. Hürthle Cells in Lymphoid Goitres. 13. The Giant Cell in Epithelio-Lympho-Fibrosis. *Part II. Clinical Aspects of Thyroid Disease.* 14. Problems in the Study of the Epithelio-Lymphoid Phases. 15. The Relation of Ectopic Rests of the Thyroid to Lymph Nodes. 16. Relation of Thyrotropic Excess to Epithelio-Lymphoid Hyperplasia. 17. The Thyroid and Ovarian Tides. 18. The Female Sexual Cycle During the Six Phases. 19. The Cardiovascular System During the Six Phases. 20. Embolism. 21. The Thyroid Crisis. 22. Exophthalmos. 23. Solid Oedema of the Legs. 24. Hypothyroidism. 25. The Colloid Goitre. 26. Malignancy—Its Relation to the Epithelio-Lympho-Fibrosis Phases. 27. The Scope of Radio-Iodine in Thyroid Disease. *Part III. Treatment.* 28. Treatment. Appendix I. Appendix II. Author Index. Subject Index.

One of the chief aims of this volume is to put forward the author's hypothesis that the toxic thyroid gland undergoes a progressive histological change which may be divided into 6 phases viz.: (1) Epithelial hyperplasia, (2) Lympho-epithelial hyperplasia, (3) Focal lymphoid hyperplasia, (4) Diffuse lymphoid hyperplasia, (5) Fibro-lymphoid hyperplasia, (6) Fibrosis.

Furthermore it is claimed that the last two phases constitute what have been called Hashimoto's Disease and Riedel's Thyroiditis respectively. A wealth of argument and histological evidence is presented in support of this, but one feels repeatedly that evidence in favour of the argument is stressed while contrary evidence is mentioned briefly or not at all. If the theory were correct one might wonder why so few cases of Graves' disease develop hypothyroidism following on operation—or for that matter even without operation. This might be explained by the statement that the progressive change towards lymphocytic infiltration and fibrosis is reversable in the early stages, but it is not entirely convincing.

There is much else that is unusual and unorthodox, and the book certainly stimulates thought—and argument. Unorthodoxy is of course not necessarily a fault, but so many of the author's views call forth argument and a demand for proof that one is frequently left unconvinced.

The chapters on exophthalmos, solid oedema of extremities (so-called pretibial myxoedema) and malignancy are excellent and most informative. Prolonged use of Thiouracil is stressed as a cause of solid oedema of the extremities, which soon reaches an irreversable stage if not recognized early.

The printing and reproduction of diagrams and photographs are excellent. Even if one does not agree with many of the author's views in the earlier chapters the book certainly stimulates thought on the subject, and in the later chapters provides much useful information on the whole field of thyroid disease.

M.J.B.

ATLAS OF HAEMATOLOGY

Sandoz Atlas of Haematology. By Dr. E. Undritz (Sandoz Limited, Basle) and translated by Dr. A. M. Woolman. (Pp. 91 with illustrations. £2.9s.6d.) Basle: Sandoz Limited. Obtainable from P. B. Mayer, Cape Town, or from local booksellers. 1952.

Contents: Part One. General Considerations. 1. Fundamental Principles of Haematology. 2. The Technique of Blood and Bone Marrow Examination. 3. Forms for Recording the Results of Blood and Bone Marrow Examinations. 4. Normal Values Obtained on Blood and Bone Marrow Examination. *Part Two. Systematic Survey of Morphology of the Blood Corpuscles.* 1. Table for the Differentiation of Mature Leucocytes. 2. Tables for the Differentiation of the Stem Cells of the Blood Corpuscles. 3. The Erythrocytes. 4. The Leucocytes. 5. Cellular Elements Found on Marrow Puncture but not Belonging to the Haemopoietic Systems. 6. Destruction of the Blood Cells. 7. Artefacts of Cellular Elements of the Blood and Bone Marrow. 8. Soiling of Blood and Bone Marrow Films. 9. Blood Parasites.

Haematology, like other medical sciences, has undergone many advances and improvements in recent years, but the new techniques have not reduced the importance of morphological examination of the blood cells, the scope of which, indeed, has been increased by extended use of sternal punctures, for the examination of which a greater competence and experience in the morphology of the blood cells is necessary. The need today for an accurate atlas of haematology is very great, and we welcome the appearance in English of this atlas.

The book is more than an atlas. Part I is concerned with general haematological considerations, terminology, normal values, histogenesis, etc.; Part II deals with morphology; and the third part, equal in size to the other two combined, is the atlas proper, with 256 figures and 44 large coloured plates, interleaved with the same number of pages of descriptive text. The plates all show

photomicrographs in colour, and many of the figures consist of 3-5 separate photomicrographs. By this means individual cells are generally shown, at a magnification of 1,200—high enough to give the necessary detail—and a wide field of illustration is achieved in a volume that is not too bulky.

The range of blood cells beautifully photographed and reproduced is very complete, and common artefacts as well as rarities are included.

As a result of translation from the German, a few unusual terms have been introduced, mainly eponyms, but this is a small matter in haematological literature, where the growth of terminology is even more lush than in dermatology. The binding is in loose-leaf form, with space for considerable additions.

The book is worthy of the highest praise and at the price is a bargain indeed. It is published by the well-known pharmaceutical firm of Sandoz, which explains the very low price for a production of this quality, and possibly the fact that the name of the author is introduced only in the preface. It can be highly recommended to a wide variety of users, from the practitioner who occasionally 'looks at bloods' to the haematological expert, and both will find in it something new to them, as well as much that is helpful and instructive.

J.G.T.

DIFFERENTIAL DIAGNOSIS

Handbook of Differential Diagnosis. By Harold Thomas Hyman, M.D. (Pp. 716 + xxix. 55s.) Philadelphia; London; Montreal: J. B. Lippincott Company. 1953.

In the preface the author states that 'its style chosen for utility rather than for literary merit is not conducive to consecutive reading.' With this I fully agree. I can hardly, however, agree where further in the preface the author claims it to be of value for practising physicians and specialists.

Too often in the discussion of manifestations and symptoms the reader is advised, as the case may be, to consult a surgeon, a gynaecologist, haematologist, etc., which is of very little use to the practitioner in the country or in an isolated place. On p. 38 in the discussion of acidosis due to uraemia the reader is advised 'to consider transfer of patient to institution equipped with artificial kidney'; nor can I agree with the following statement on p. 41: 'Panic states characterise latent homosexuality and approaching schizophrenic deterioration. Make immediate reference to psychiatrist.'

Though critical of this handbook I must admit that it contains a great deal of very useful information, especially on the rarer clinical conditions.

A.M.M.

CORRESPONDENCE : BRIEWERUBRIEK

A PRAYER IN VERSE

To the Editor: In the *Journal* of 10 July I read a prayer in prose honouring the memory of Dr. W. Rubidge, who must have been an inspiring and gifted personality. The prayer was so impressive that I felt compelled to convert it into verse. I have therefore taken many of the thoughts and some of the words and welded them into a verse.

In my opinion, verse—other factors being equal—must read more fluently, because of rhythm, i.e. metre, but not necessarily rhyme. In any event I trust that my colleagues will forgive this intrusion into a scientific journal. I enclose the verse for what it is worth.

Arnold Rieck

P.O. Box 7
Hopetown
Cape
27 July 1954

THE PHYSICIAN'S PRAYER

'Dear Lord, grant this a doctor's humble prayer:
Help me to neither falter nor evade.
Cleanse me from prejudice and stubborn pride
For these breed false beliefs and egotism.
Let me assume no skills, but justly earned,
And mark for me integrity, a precious gift.
Let me cleave to Truth and not adorn
My mind with fatuous thoughts and jealousies.
Guard me 'gainst evil—e'en in subtlest form,
Yet help me tolerate the faults of others.
Guide my hand too in those despairing hours
When I have erred in tasks beyond my skill
And yet, let courage ever be my garment.
Deliver me from crude and callous acts,
Thus keep me human—withal free from maudlin traits,
That mine—the Physician's—mind be bright as steel.
'Bove all, teach me the priceless Joy of healing,
That when I stand on trial at Judgment Day
I may be tranquil in the sure belief
That I helped soothe Life's restless tragedy . . . .' Amen.

A.R.

THE GENERAL PRACTITIONER AND HOSPITAL APPOINTMENTS

To the Editor: It is with deep concern that many general practitioners view the present trend in general practice and the deterioration in the status of the general practitioner.

One factor which augurs for the improvement of the G.P.'s status is the emergence of G.P. groups. Other constructive suggestions with a similar purpose are mentioned in a recent article by Charles M. Fleming.[1] I could not help comparing conditions in America, and the sound suggestions for improving the standard of general practice in Britain, with the conditions prevailing in South Africa. What impressed me most about this report was the importance attached to hospital appointments for G.P.s. 'The best method of keeping up to date is, of course, by means of a hospital attachment.'

It seems to me that in the hospital lies the solution to many of the ills of general practice. There in the hospitals those concerned with the teaching of medicine can stimulate in the G.P. the desire for greater knowledge. Moreover, this contact between specialist and G.P. will lead to a better understanding of the problems peculiar to general practice, and a greater co-ordination between G.P. and hospital service, which will be of considerable benefit to the patient.

In America (where Fleming was impressed by the standard of the G.P.) approximately 50% of G.P.s had some form of hospital appointment. It is worth re-quoting the recommendation of the Hospital Council of Greater New York: '(1) That all hospitals appoint general practitioners to their staffs and, under the jurisdiction of the chiefs of the various services, give them the opportunity of working in different departments, and the educational advantages afforded by the institution; and (2) that general hospitals establish appropriate professional units to guide the activities of general practitioners on their staffs, and work out a programme for each individual practitioner with the various clinical departments. It is understood that the extent of the hospital privileges given to a doctor should depend on his training, experience, and competence, and that his work should be supervised.'

Joseph B. Herman, B.Sc., M.B., Ch.B.

Stuttaford's Building
St. George's Street
Cape Town
3 August 1954

1. Fleming, C. M. (1954): Brit. Med. J., **1**, 1391.

(The first half of Dr. Herman's letter, which deals with improvement in G.P.-specialist relationship, has been excluded in pursuance of a resolution of Federal Council—see the *Journal* of 26 June 1954 (**28**, 555)—to the effect that for a certain period before the closing date of the forthcoming questionnaire no correspondence on the subject of the registration of specialists should appear in the *Journal*.—*Editor*.)

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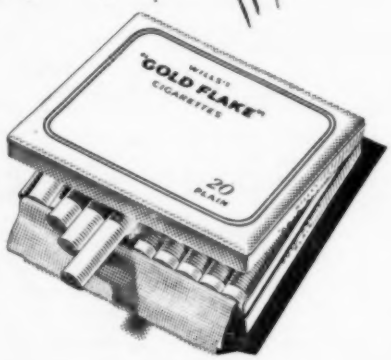

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ASSISTANTS/LOCUMS REQUIRED
ASSISTENTE/PLAASVERVANGERS VERLANG

DAAR IS 'N DRINGENDE BEHOEFTE VIR ASSISTENTE EN PLAASVERVANGERS IN PLATTELANDSE EN STEDELIKE GEBIEDE. BESONDERHEDE OP AANVRAAG.

FOR SALE : TE KOOP

(1513) Spreekkamermeubels, geneesmiddels en instrumente.

* * *

DURBAN

112 Medical Centre, Field Street. Telephone 2-4049

PRACTICE FOR SALE

(PD25) Durban. House and practice available, suitable for a surgeon. Details on application.

(PD26) Transkei. Practice established 8 months ago. Average monthly turnover £126/£140. Two appointments held District Surgeon and M.O. to Native Recruiting Corporation. New outstation clinics could be opened. Trout and river fishing within 15 miles. Will consider any offer.

(PD/27) Drakensberg Native Reserve area. Dispensing practice established February 1954 on part-time basis. Cash takings approximately £400. Buyer to take over drugs at cost, approximately £150 and equipment £60. Goodwill to be calculated as a percentage of the takings at the end of July.

(PD28) Durban. General practice also non-European surgery. Owing to ill-health owner wishes to sell as soon as possible. Before illness gross income £3,000 per annum. Premium £2,000. House for sale.

LOCUMS REQUIRED

Zululand. For two months or possibly longer. £2 12s. 6d. per day, all found and car allowance.

ASSISTANT REQUIRED

(AM2) Assistant required for trial period. If suitable partnership will be offered. General practice in select area approximately 20 miles from Durban.

INSTRUMENTS FOR SALE

Two Electrocardiograph machines in first class order. Owner acquiring self-reading machine. Offers to be made.
Davidson Pneumothorax apparatus. Practically new. Any offer considered.
Super-sonic (Impulsaphon) Machine in perfect condition. £250 immediate sale.

JOHANNESBURG

Medical House, 5 Esselen Street. Telephone 44-9134-5, 44-0817
Mediese Huis, Esselenstraat 5. Telefone 44-9134-5, 44-0817

ASSISTENTE: PLAASVERVANGERS VERLANG.
ASSISTANTS: LOCUMS REQUIRED.

(576) O.V.S. Plaasvervanger benodig vir Desember. Salaris £3.3.0d per dag en alles vry. Min nagwerk.
(583) Reef hospital town. Locum required for three months or longer as from 1 October.
(595) Southern Rhodesia. Locum is required as from 21 September till 7 February. Salary £100 p.m. plus free board and lodging and a car allowance will be paid.
(600) Aangename Natalse dorp, met hospitaal. Assistent met definitiewe oog op vennootskap, verlang.
(609) Groot Transvaalse hospitaaldorp. Plaasvervanger vir September. Salaris £3.3.0d. per dag en alles vry. Kan woon in hoof se huis.
(611) Johannesburg. Locum as from 10 Decemebr for one month. Salary to be arranged.
(612) Town near Johannesburg. Assistant is required to start as soon as possible. DEFINITE VIEW TO PARTNERSHIP. Excellent salary offered. Preferably someone interested in surgery. Must be a young man, single or married.
(613) Johannesburg, suburban practice. Locum as from 8 till 20 August. Car provided. Excellent salary.
(615) O.V.S. Plaasvervanger vir Desember *of* Januarie. Privaat praktyd met spreekkamers in huis. Min nagwerk. £3.0.0d. per dag, alles vry en 6d. per myl distriksritte. Moet eie kar gebruik. Sal dame ook pas.
(616) Pretoria. Plaasvervanger vir November en Desember. Salaris £100 per maand, alles vry en £10 p.m. kartoelae. Iemand met sy eie praktyk in Pretoria, hoef nie aansoek te doen nie.
(621) Large hospital town in O.F.S. Locum is required in partnership practice, for September and October. Very well-organised practice. Must have his own car. Terms: £3.3.0d. per day and all found.
(622) Non-European practice near Johannesburg. Locum is required from 27 December till 27 January, and will suit a young man residing in Johannesburg. Practically no night work and no Sunday work. Terms: £3.3.0d per day and £1.1.0d. per day car allowance. Hours 9.30 a.m. till 4.30 p.m. daily, and locums with practices elsewhere need not apply.
(623) Gold Coast. Locum is required to start immediately, for three months. Salary plus allowances over £200 per month. Air passage paid, bothways. Very easy hours and no night work. Golf, tennis and swimming baths.
(624) Rand. Plaasvervanger vanaf 9 tot 31 Desember, n aangename praktyk, en sal 'n bejaarde persoon ook pas. Eie kar nodig. Salaris £3.3.0d. per dag en alles vry. Woning beskikbaar vir getroude persoon.
(625) Partnership practice near Johannesburg. Locum as from 10 October till 10 December. Own car necessary. Terms: £3.3.0d. per day and all found. Own car necessary.
(626) Reef hospital town. Very large and busy practice. ASSISTANT to start 1 September. Own car necessary. Excellent salary and car allowance will be paid.

PARTNERSHIP FOR SALE.

(Pr/S138) REEF HOSPITAL TOWN. A FOURTH SHARE is offered in a well-established practice, with appointments and easy terms could be arranged. ALL surgery undertaken and the incoming man should have some surgical experience. EXCELLENT OPPORTUNITY FOR A YOUNG BILINGUAL MAN, JEWISH OR GENTILE.

Witwatersrand Jewish Aged Home

HONORARY PHYSICIAN

Applications are invited for the post of Honorary Physician, Physical Medicine, to the Witwatersrand Jewish Aged Home, to fill the vacancy caused by the death of Dr. W. Ziv.

Applications are to be addressed to The Secretary, P.O. Box 782, Johannesburg.

1657

IMPORTANT NOTICE

Medical practitioners who intend applying for any appointment specified in this notice for which an advertisement appears in this issue of the Journal are advised to communicate first with the Honorary Secretary of the Branch of the Medical Association of South Africa concerned:

Advertisement: **Vanderbylpark Medical Benefit Fund — Post of Consultant Radiologist.**

Branch: **Southern Transvaal Branch, 5, Esselen Street, Johannesburg.**

Federation of Rhodesia and Nyasaland

DEPARTMENT OF DEFENCE

VACANCY: MEDICAL OFFICER

A vacancy exists for the appointment of a full-time Medical Officer in the Permanent Force.

The successful applicant will be required to attest in and serve under the conditions of service of the Southern Rhodesia Staff Corps.

The appointment will be in the rank of Captain and the following rates of pay will apply:

1st year	£1,269 0s. 0d. per annum
2nd year	£1,302 0s. 0d. per annum
3rd year	£1,335 0s. 0d. per annum
4th year	£1,368 0s. 0d. per annum

In addition to the foregoing, a professional allowance of £200 per annum will be paid.

A married officer, in addition to the above, will be paid up to a maximum of £180 per annum Quarters Allowance if Government Quarters are not provided. Children's allowances are payable if applicable.

The officer will be on the staff of the Director of Medical Services.

Duties will consist of medical attention to Permanent Force personnel and their dependants which includes domiciliary visits and treatment in Government hospitals, to which medical officers have full access, and any other duties which the Director of Medical Services may direct.

Previous experience of service medicine is desirable but not essential.

Application should be addressed to:

(In the Federation and Union of South Africa) Headquarters, Central African Command, P.O. Box 21, Causeway, Southern Rhodesia.

(In the United Kingdom) The Secretary, Office of the High Commissioner for the Federation of Rhodesia and Nyasaland, 429 Strand, London, W.C.2. 9103

Vanderbijlpark Medical Benefit Fund

POST OF CONSULTANT RADIOLOGIST

Applications are invited from Registered Radiologists for the above position.

A salary of £1,200 per annum will be paid to the successful applicant and in addition a transport allowance will also be paid.

Details of the work to be performed will be decided upon by mutual agreement.

Applications giving full details of qualifications and experience should reach the undersigned, P.O. Box 1, Vanderbijlpark, not later than 24 August 1954.

Application forms will be forwarded to bona fide applicants on written application to the undersigned.

H. A. Lambrechts
Secretary
Vanderbijlpark Medical Benefit Fund

P.O. Box 1
Vanderbijlpark
5 July 1954

Provincial Administration of the Cape of Good Hope

HOSPITALS DEPARTMENT

JOINT MEDICAL STAFF: VACANCIES

1. Applications are invited for the undermentioned vacant posts of Medical Practitioner on the Joint Medical Staff of the Groote Schuur Hospital.

2. The conditions of service are prescribed in terms of the Hospital Board Ordinance, No. 19 of 1941, as amended, and the regulations framed thereunder.

3. Applications should be submitted (in duplicate) on the prescribed form, Staff 23, which is obtainable from the Director of Hospital Services, P.O. Box 2060, Provincial Building, Wale Street, Cape Town, or from the Medical Superintendent of any Provincial Hospital or Secretary of any School Board in the Cape Province. The closing date for the receipt of applications is 25 August 1954 and applications should be addressed to the Medical Superintendent, Groote Schuur Hospital, Observatory, Cape.

Department	*Post*
Medicine	1 post Medical Practitioner, Grade 'B'.
do.	1 post Medical Practitioner, Grade 'A'.

The following are the emoluments of the abovementioned posts.

Grade 'B': £720x40—£960 per annum.
Grade 'A': £500—600—660—£720 per annum.

In addition a cost of living allowance is payable at present at the rate of £320 per annum to married officials and £100 per annum to single officials.

Qualifications Required

Grade 'B': Not less than three years' experience after graduation or two years' experience after registration.

Grade 'A': Up to and including three years' experience after graduation or two years' experience after registration.

The Grade 'A' post is to be filled in a temporary capacity.

S24577

Nakuru War Memorial Hospital Nakuru, Kenya Colony

RADIOLOGIST

The above Hospital requires the services of a fully qualified Radiologist immediately, to be engaged on one of the two following alternative bases.

The Hospital is of modern construction, has 72 beds, is fully equipped with first class X-ray apparatus, and is served by 25 general practitioners, there being no other hospital facilities within a radius of 100 miles. The climate of Nakuru is healthy, and there are ample facilities for education, sport, etc. being situated in the centre of the European settled area.

The alternative methods of engagement are:

1. To enable a radiologist to establish a practice at the hospital by making available the X-ray room and apparatus at an agreed rental. The Board of Management would consider the payment of a guaranteed income over a period of three years, on a reducing basis, during the establishment of the practice.

2. On a basis of employment by the Hospital on contract in accordance with the normal conditions appertaining to the appointment of a fully qualified radiologist to a post of this type.

Preference will be given to applicants under the age of 35 years who are desirous of establishing themselves in the Colony, where there is ample scope for a capable man to build up a sound reputation and full facilities will be granted to attain this end.

For further particulars application should be made to The Secretaries, Nakuru War Memorial Hospital, P.O. Box 35, Nakuru, Kenya Colony.

G.M.T.S. MEDICAL BENEFIT FUND

Applications are invited from Doctors resident in the Welkom Area, Orange Free State, to serve as Medical Officer to the above Fund.

For terms of appointment, etc. apply to The Chairman, G.M.T.S. Medical Benefit Fund, P.O. Box 25, Crown Mines, Transvaal.

Provincial Administration of the Cape of Good Hope

HOSPITALS DEPARTMENT

HOSPITAL BOARD SERVICE: VACANCY

1. Applications are invited from registered medical practitioners for appointment to the following vacant post:

Institution	*Post*	*Emoluments*	*Closing Date*	*Applications to be addressed to:*
Woodstock Hospital, Woodstock, Rondebosch Hospital, Rosebank, Mowbray Maternity Hospital, Mowbray, Peninsula Maternity Hospital, Cape Town, Steyning Maternity Clinic Claremont.	Medical Practitioner, Grade C (Medical Superintendent).	£1,000x50—1,200 p.a.	4.9.54	The Director of Hospital Services, P.O. Box 2060, Cape Town.

2. Conditions of service are prescribed in terms of Hospital Board Service Ordinance No. 19 of 1941, as amended, and the regulations framed thereunder.

3. In addition to the scale of salary indicated, a cost-of-living allowance at rates prescribed from time to time by the Administrator is payable to whole-time officials and employees. The present rate is £352 per annum for married and £110 per annum for single persons.

4. The successful candidate will be required to occupy, free of charge, an unfurnished house or quarters provided at the institution, or, alternatively, if a house or quarters are not available, to occupy a house approved by the Department, in respect of which the Department will contribute an amount of not exceeding £180 per annum towards the rental.

5. The successful candidate, if not already in the Hospital Board Service, will be required to submit satisfactory birth and health certificates.

6. Application must be made on the prescribed form (Staff 23), which is obtainable from the Director of Hospital Services, P.O. Box 2060, Cape Town, or from the Medical Superintendent of any Provincial Hospital or Secretary of any School Board in the Cape Province.

7. Candidates must state the earliest date on which they can assume duty.

M127247

Provinsiale Administrasie van die Kaap die Goeie Hoop

HOSPITAALDEPARTEMENT

HOSPITAALRAADSDIENS: VAKATURE

1. Aansoeke word ingewag van geregistreerde geneeshere vir aanstelling tot die volgende vakante poste:

Inrigting	*Pos*	*Emolumente*	*Sluitingsdatum*	*Aansoeke moet gerig word aan:*
Woodstock-hospitaal, Woodstock, Rondebosch-hospitaal, Rosebank, Mowbray Kraam-hospitaal, Mowbray, Skiereilandse Kraamhospitaal, Kaapstad, Steyning Kraamkliniek, Claremont.	Geneesheer, Graad C. (Mediese Superintendent)	£1,000x50—1,200 p.j.	4.9.54	Die Direkteur van Hospitaaldienste, Posbus 2060, Kaapstad.

2. Die diensvoorwaardes word voorgeskryf ingevolge die Ordonnansie op Hospitaalraadsdiens no. 19 van 1941, soos gewysig, en die regulasies wat daarkragtens opgestel is.

3. Benewens die salarisskaal soos aangedui, is 'n lewenskostetoelae betaalbaar aan voltydse beamptes en werknemers teen bedrae wat van tyd tot tyd deur die Administrateur vasgestel word. Die teenswoordige tarief is £352 per jaar vir getroude persone en £110 per jaar vir ongetroude persone.

4. Van die geslaagde kandidaat sal dit vereis word om 'n ongemeubileerde huis of kwartiere wat by die hospitaal verskaf word gratis te bewoon, of as 'n huis of kwartiere nie beskikbaar is nie, 'n huis te bewoon wat deur die Departement goedgekeur is, ten opsigte waarvan die Departement 'n bedrag van hoogstens £180 per jaar tot die huur sal bydra.

5. Die geslaagde kandidaat, indien nie reeds in die Hospitaalraadsdiens nie, moet bevredigende geboorte- en gesondheidsertifikate indien.

6. Aansoek moet gedoen word op die voorgeskrewe vorm (Staf 23), wat verkrygbaar is by die Direkteur van Hospitaaldienste, Posbus 2060, Kaapstad, of by die Mediese Superintendent van enige Provinsiale Hospitaal, of by die Sekretaris van enige Skoolraad in die Kaapprovinsie.

7. Applikante moet die vroegste datum meld waarop hulle diens kan aanvaar.

M127247

Natal Provincial Administration

VACANCY: MEDICAL SUPERINTENDENT: DUNDEE HOSPITAL

Applications are invited from registered Medical Practitioners for appointment to the post of Medical Superintendent, Dundee Hospital.

Salary Scale: £1,680 per annum fixed.

The post is pensionable as from April 1955 and holds a cost of living allowance at the following rates:

Married: £234 per annum.

Single: Nil.

If not successful in their applications would applicants state whether they are prepared to accept a similar post at one of the other hospitals.

Applications giving full particulars should be addressed to the Director of Provincial Medical and Health Services, P.O. Box 20, Pietermaritzburg, to reach him not later than 28 August 1954.

AD8269

Natalse Provinsiale Administrasie

VAKATURE: GENEESHEERSUPERINTENDENT: DUNDEE HOSPITAAL

Aansoeke om aanstelling in die betrekking van geneesheer/superintendent aan die hospitaal Dundee word ingewag van geregistreerde mediese praktisyns.

Salarisskaal: £1,680 per jaar (vas).

Die betrekking is pensioengewend vanaf April 1955 en 'n duurtetoeslag word teen die onderstaande tarief betaal:

Getroudes: £234 per jaar.

Ongetroudes: Geen.

Applikante moet vermeld of hulle bereid is om 'n dergelike betrekking aan een van die ander hospitale te aanvaar indien hul aansoeke nie slaag nie.

Aansoeke moet gerig word aan die Direkteur van Provinsiale Mediese en Gesondheidsdienste, Posbus 20, Pietermaritzburg, sodat hulle hom voor of op 28 Augustus 1954 bereik.

AD8269

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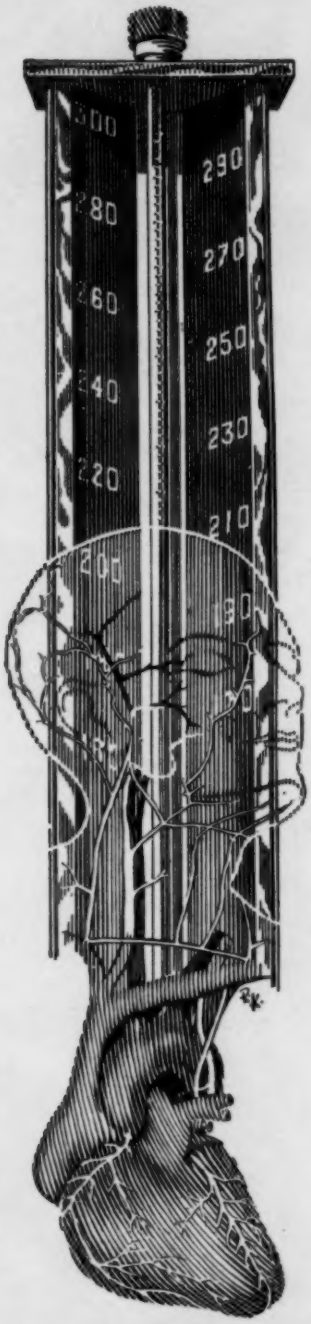

In Cardiology

'Hyperysin'

HOMMEL

for rapid and safe antihypertensive effect

In the treatment of all manifestations of vascular spasm, it is now believed that papaverine nitrite has superseded the hydrochloride because of the latter's greater toxicity. Furthermore, the classically recognized value of nitrites in hypertension and the accepted sedative efficacy of papaverine are happily combined in the potentiated antispasmodic action of papaverine nitrite — the principal ingredient of 'Hyperysin.'

COMPOSITION

'Hyperysin' tablets each contain:

Papaverine nitrite	0.7 *gr. approx.*
Hexamethylenetetraminodichloralhydrate ..	3.0 *gr. approx.*
Carbromalum B.P.C.	3.0 *gr. approx.*

ADVANTAGES

Low toxicity: Papaverine nitrite is less toxic than papaverine.

Synergism: The papaverine nitrite is synergistically potentiated by two other reputable sedatives.

Gradual effect: 'Hyperysin' does not act so abruptly as the majority of nitrites.

INDICATIONS

'Hyperysin' is a clinically proven agent in cardiovascular diseases manifesting arterial spasm and pathologically raised B.P.

Essential Hypertension
Angina Pectoris
Angiospastic Crises
Intermittent Claudication

PACKING: Containers of 15 and 500 Tablets.'

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